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THE

Dental Summary

EDITED BY

L. P. BETHEL, M. D., D. D. S.

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PRESS OF
THE FRANKLIN CO., TOLEDO, OHIO

DENTAL COLLEGE TEACHERS' CONTRIBUTIONS

FACIAL PARALYSIS AND PERIODICAL LOCK-JAW CAUSED BY A SUPERIOR LEFT SECOND BICUSPID OF TWENTY-FIVE YEARS DELAYED ERUPTION.

BY BURTON LEE THORPE, D. D. S., ST. LOUIS, MO.

Professor of Operative Dentistry and Dental History, Barnes Dental College.

On July 23, 1902, Mrs. E., aged forty years, called for consultation, presenting the mucous membrane of superior maxillary in such highly inflamed and swollen condition, that intense pain was caused even when gums were painted with a local anesthetic.

Patient complained of suffering intense pain in whole right side of head, face and neck, being unable to eat or sleep for several weeks past. As a result she was in a greatly emaciated and weakened condition.

Upon close examination the teeth of the upper jaw were found not causing the trouble. A slight protuberance in the right center of the mouth, of hard springy consistency lead me to believe an unerupted tooth the disturbing cause.

Nerve sedatives and a tonic were prescribed and the patient sent home to recuperate her strength. In the meantime, I learned the history of the case: The patient informed me that for twenty-five years she had been a sufferer from intense headaches that totally incapacitated her at times from household duties; and that, at intervals, she had partial facial paralysis of the right side of the face and for several weeks in 1881, and at other intervals, had lock-jaw, all of which were

treated times innumerable by a number of physicians, without result, and without referring her to a dentist.

She informed me that in 1879, at the age of seventeen years, she was a patient of Dr. J. B. Monfort (of Fairfield, Iowa), who made a model of her mouth. Upon this information, I wrote Dr. Monfort, who kindly and promptly sent me the model for this illustration. (See Fig. 1).

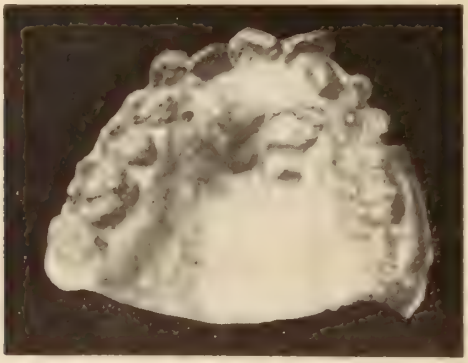

Fig. 1.

From it may be seen that the superior right first and second bicuspids are erupted and that the *superior left first bicuspid is also erupted*, but the *superior left second bicuspid is not in evidence.*

This model fully convinced me the superior left second bicuspid germ had either been transposed or that instead of erupting in proper place had been burrowing through the bone causing the pain.

On August 5th, the patient returned greatly strengthened, yet still suffering pain; the gum tissue, highly inflamed and painful to the touch, was thoroughly saturated with a four per cent saturated solution of cocaine and campho-phenique applied locally, and the patient given two ounces *spirits frumenti.* With a sharp lance, a cross incision was made opposite the right superior cuspid, posterially to the center of the mouth. The gum was laid back exposing the bone.

With bone-chisel and engine-burs the bone was removed,

exposing the well-formed *left superior second bicuspid,* embedded horizontally in solid bone with the end of the exostosed root in contact with the superior right cuspid tooth. (See Fig. 2.)

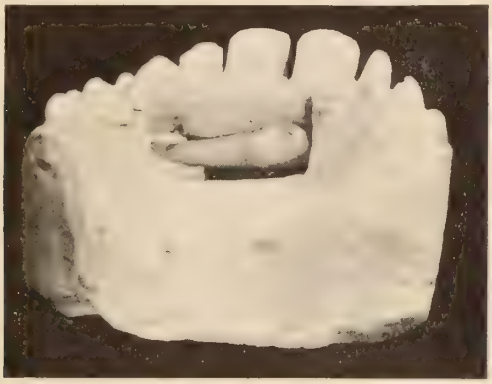

FIG. 2.

With use of elevator and forcep the tooth was removed, cavity dressed and closed and antiseptic mouth-wash prescribed.

The pain continued at intervals, daily decreasing, until the patient was absolutely free from headaches and facial pains, entirely recovering her health, and at ease the first time in a period of twenty-five years.

A LEGITIMATE USE OF THE CARBORUNDUM DISK AND WHEEL IN THE FILLING OF TEETH.

BY OTTO E. INGLIS, D. D. S., PHILADELPHIA, PA.

Lecturer on Dental Pathology and Therapeutics, Philadelphia Dental College.

Having had for many years to care for teeth which have before coming to my hands been the victims of oral neglect, it has been my lot to be compelled to resort to many methods of doing for each individual tooth what seemed best for that tooth.

In general, the principle of reasonable extension for prevention and the employment of contour methods in filling have been followed with very satisfactory results.

I desire in this article to speak of results to be obtained from a combination of the contour principle with that of removal of tooth substance by separation.

The observations made have partly been upon the teeth of my own patients, and partly upon those of the patients of other practitioners who have fallen into my hands.

It frequently happens that upon excavating an occlusal cavity there will be found numerous grooves or convolutions in the enamel aside from the usual fissures. These may be of such form as to demand that the cutting shall extend nearly to the points of the cusps, otherwise small elevations or foothills of enamel will remain at the cavity margin. In such case if the depredations of caries do not demand removal, I have had satisfactory results from the use of a Leaming's "Vulcan Carborundum" wheel number 470. Its small diameter and rounded cutting face enable it to quickly grind away the enamel to a smooth concavity. The cavity may be less extended yet sufficiently so and the filling presents a more agreeably outlined contour when finished.

Every operator has met with cases of molars and bicusputs slightly out of the regular alignment of the arch. This shifts the proximal contact point to near the buccal or lingual angle, as the case may be, the other angle being left free.

Let us take for example a left lower first molar presenting somewhat bucally to the line of the arch; decay has occurred at the contact point, and a deep cavity is found requiring, as a rule, extension into the occlusal fissures.

It may be that the buccal wall of the cavity is weak, the enamel alone remaining, and it may be desirable to retain this in part, yet its future fracture is feared if a metal filling is to be inserted. It should be cut away to a gradual slope which removes the distal lobe, yet leaves the enamel margin of such shape as to give the metal a strong, well-defined edge. If now the margin be too sharp a sand-paper disk or fine carborundum stone, may be passed over it, truncating it occlusally and buccally. This blunted margin will receive less impact than one left sharply standing, and often serves as well as when the enamel is cut away and the filling extended bodily over it. If indicated, a cement lining will give support. It may again be desirable to retain the buccal wall for appearance sake, as in a more anterior tooth, when amalgan is to be used.

In such case the corundum wheel may be applied to the occlusal margin of the buccal wall and the same cut down bodily until at a distinct angle with the occlusal surface. The filling is brought flush with this enamel, not built over it. The proximal contact may be restored nearly as usual.

Johnson* notices this principle when he says, "that a tooth with its masticating area reduced one-half, but containing a filling safely anchored and enamel so sloped as to avoid fracture, is more reliable than one presenting a full masticating area subject to the danger of filling displacement and fractured enamel walls." He also touches upon the matter of the contact.

If in the first molar referred to, the lingual wall be weakened by caries, the same principle may be observed.

At times a buccal cavity in the cervical third must be included with a disto-occlusal one, as in the case of a lower third molar. This may leave the disto-occluso-buccal angle so weak as to suggest its future fracture, in which case the appli-

*"Principles and Practice of Filling Teeth," p. 109."

cation of the wheel to the buccal aspect of it will largely remove it and permit the filling to slope shapely disto-buccally, and in this way be relieved of the stress exerted by the impact of the disto-buccal cusp of the upper third molar.

In the case of superficial enamel decalcification occurring upon the labial surface of a central incisor, or the buccal surface of a third molar, a judicious use of wheels, followed by high polishing with a leather wheel and pumice and chalk, will afford a new enamel surface, useful in the degree of personal cleanliness.

The narrow proximations of nicely-rounded surfaces, as a rule, enable extension for prevention to be easily made by a very reasonable amount of cutting buccally, lingually and cervically.

Broad proximations of the teeth offer difficulties which have received the serious consideration of the profession.

Arthur introduced his method of permanent separation of sound teeth for the purpose of preventing decay in this class of cases, but as the remedy resulted in the evil he sought to prevent, as well as in a worse state than would have occurred had it not been employed, it fell into disuse. This was followed by the introduction by Bonwill of the double V-shaped separation, and Chupein's method of the single V on the lingual side. In all cases, the cutting was carried into the dentin which was left exposed after polishing.

I have no desire to revive these methods, nor to introduce a method of permanent separation, yet in individual cases of broad proximatures, a modification of the principle serves a useful purpose.

It is conceded as a principle in extension, that the margins of fillings must be brought within the sphere of influence of masticatory friction and tooth-brush friction.

When it becomes necessary to operate upon proximal surfaces of molars having small cavities difficult of access, and experience with the patient has shown that a liberal extension in such cases will probably be productive of much infliction, I believe that it is quite proper to apply an Arthur disk, or other

suitable hard rubber, and carborundum disk to the occluso-lingual aspect of the two teeth, and to cut a slight V-shaped space which preferably should not more than cut through the enamel upon the proximal surface. The gingival enamel should not be more than slightly reduced, and should not be cut through. The cavities may now be approached by means of occlusal openings, and should be extended lingually so as to include any dentin exposed by cutting, and the buccal margins so arranged as to avoid marginal contact.

In some cases under compulsion a large, round dentate bur may be used from the lingual aspect upon the two cavities at once. Bearing directly upon the two buccal margins and then upon both cervical margins, the gradual widening of the space between them is an indication that the contour requirements are being met. A smaller bur will now deepen the cavity, and shape the margins for the proper acceptance of a filling and maintenance of filling integrity and also give proper retentive form to the cavity. The fillings and enamel should be highly polished.

This method insures an easy access and prompt preparation after slight separation, and to my mind reasonably fulfills the requirement to be met by more extended cutting for filling. It is to be understood that the metal is to be contoured at the contact point and there allowed to touch firmly.

This method of occluso-lingual approach is especially useful in the deciduous molars with small proximal cavities.

A lower second deciduous molar should be especially carefully watched upon its distal surface to avoid contamination of the first permanent molar, and by this means comparatively small and well-finished fillings may easily be made.

I will again state that these methods are suggested for the cases in which they are indicated and in no sense as a method of separation for pervention of decay in undecayed teeth.

SURGERY VERSUS EMPIRICISM.

BY B. HOLLY SMITH, BALTIMORE, MD.

Professor of Operative Dentistry and Dental Surgery, Baltimore College of Dental Surgery.

Perhaps no more salutary advance in dental teaching and practice has been made than the substitution of surgical methods in the removal of the dental pulp for the old-fashioned empirical one of "destroying the nerve"; and yet it is apparent to all who will observe the high-sounding testimonials given so freely by members of our profession to nerve pastes and mummifying mixtures, that at least a large proportion of our practitioners either fail to appreciate the advantage of surgical methods or are unwilling to take the pains to pursue them. In the early editions of the American Journal of Dental Science we find letters from the then most successful practitioners describing the novel advantage to be obtained by the application of arsenic to the dental pulp, ascribing to it the wonderful quality of entirely relieving any sensation in the pulp, and preventing its annoying complainings after filling. The arsenic was simply applied and the tooth subsequently filled without any effort at pulp removal. No explanation of the action of the drug was attempted, but the practice of its application has been followed from that day to this. The *modus operandi* varied somewhat, but always was accompanied with the same empirical spirit of ignorance of anything more than the fact that "it has killed thousands of nerves." The practice has settled down on the followers of our profession like a dark cloud, obscuring their vision and hiding the light which science would shed abroad.

Regeneration is needed and only to be obtained by right application of the principles of surgery even though the operation take more time and skill than the slipshod method of application of arsenic and it is in the hope that reformation may be had through the training of the student, that this plea is made for greater emphasis on this point in college work.

The practice of applying arsenic once formed will be difficult to overcome as the busy practitioner, like the drowning man, will often grasp anything in the hope that it will help him out. The fact is that the root of this evil lies in the management of the clientele. Too often dental practitioners have what they call consultation hours, into which they try to crowd all patients who need brief treatment, and for the time the office is converted into a cotton exchange. Perhaps a majority of the patients seen in these hours, if time had been reserved, might have been permanently aided by the operator, instead of having been put off with a treatment.

A lady recently showed me the root of a first bicuspid tooth broken off even with the gum, giving the following history which I believe to be the history of many teeth. "It was first filled with gold but was so sensitive to cold, the filling was removed and arsenic applied. The tooth was then treated three times a week all during the winter till it broke off."

If the operator (a graduate and a man of some reputation) had spent two hours on that tooth, the pulp could have been removed, the root canal filled and the cavity ready for return of gold filling. It was not because the dentist did not know how, that that tooth was not saved, but because he had formed a villainous habit of applying arsenic and treating teeth.

What he should have done was to apply cocaine cataphorically until exposure without pain was secured; next a piece of spunk saturated with cocaine should have been placed over the exposed pulp, over this again a small piece of unvulcanized rubber, at first slight and gradually increasing pressure should have been used until the pulp became anesthetized; it could have been removed then, the canal wiped out with an antiseptic and filled. A temporary stopping should then have been placed in the cavity and an appointment made for permanent filling, or the temporary filling allowed to remain for a few months at the option of the operator. If this practice were the rule we should see fewer instances where arsenical necrosis caused pericemental disturbances and ulterior loss of teeth.

Don't use arsenic. Don't dismiss your patients with cotton when you can help them by the application of your skill and knowledge. Excuses do not relieve pain. If your patient suffers do not stop short of relief. Bring to your practice the application of the Golden Rule: do unto others as you would that they should do unto you. This will make you a factor in the grand advance from ignorance and empiricism to the skillful application of scientific principles for the relief of suffering, an advance which will unquestionably mark the course of our noble calling. God speed the day.

REGULAR CONTRIBUTIONS

A SYSTEM OF PORCELAIN INLAY.*

BY ARTHUR E. PECK, M. D., D. D. S., MINNEAPOLIS, MINN.

In presenting this system of porcelain inlay to the dental profession, I do so, realizing that it is but a step forward in the progress of dental art, and as such, is based upon the experience and discoveries of others, which makes it difficult, if not impossible, to trace the origin of an idea.

I shall not attempt to give credit to whom it may rightfully belong, but feel grateful to those who have cleared the way; and in the evolution of dentistry, trust that my thought, with that of others, may have produced a system, whose detail of the technic is sufficiently clear to enable the many to obtain artistic results by purely mechanical steps.

Those who do accurate work by the burnished system, do so because of having exceptional manipulative ability, which is as impossible for them to transmit to others, as it is for the artist to explain how he produces apparent life in his pictures.

The draughtsman obtains artistic results by the joining of lines drawn at certain angles. This knowledge is transmissable, as it is the application of a principle, by mechanical means, which will always produce a certain result.

The author of these articles has endeavored to formulate a system controlled almost by mechanical principles; therefore, it can be easily followed and will insure to the large majority, as uniform results in porcelain as those obtained with other filling materials.

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PLATE II.

Porcelain has a distinctive field in the practice of dentistry. It is not calculated to entirely supplant gold, amalgam, or other filling materials, and its application requires good judgment and a thorough comprehension of its limitations as well as its advantages.

The road to success, in this class of work, is not an easy one, but the satisfaction in being able to use porcelain successfully is worthy of the effort.

A practical case should not be attempted until the technic has been thoroughly mastered, and a cavity of each class has been prepared *out of the mouth.* A complete knowledge of the technic alone will insure a successful operation *in the mouth.* This fact cannot be impressed too emphatically.

Porcelain inlay work will not admit of slighting in any particular, therefore any short-cut method should be thoroughly investigated before being adopted, as it usually leads to imperfections. In no branch of dentistry is painstaking thoroughness more essential.

For this system, cavity preparation is divided into eight classes:

1.—Cavities involving one surface, labial cavities.

2.—Cavities involving more than one surface, mesio-labial.

3.—Cavities involving mesio-labial-lingual.

4.—Cavities involving mesio-labial-lingual-incisal.

5.—Cavities involving labial-lingual-incisal.

6.—Cavities involving the whole incisal edge.

7.—Cavities involving the approximal and occlusal surfaces of the posterior teeth.

8.—Cavities involving the whole occlusal surface of the posterior teeth.

The three initial steps in cavity preparation are the same in this as in all others; first, breaking down of undermined enamel; second, removal of the softened dentine; third, extension for prevention. *But the fourth, extension for retention, is*

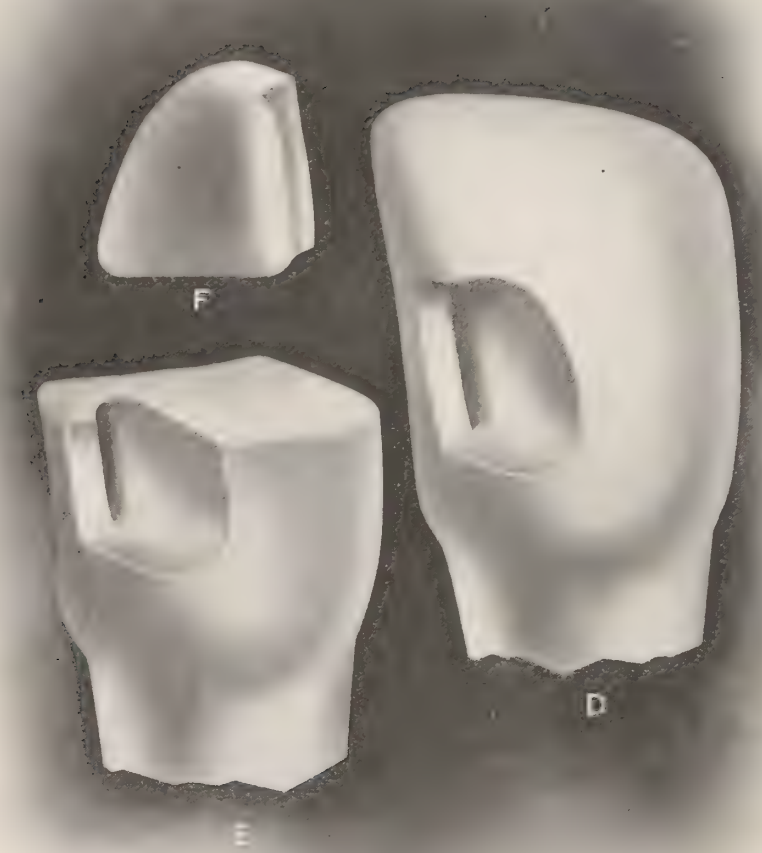


PLATE III.

a distinctive feature of this system, the theory of which must be fully comprehended before any attempt to put it into practice in the mouth.

LABIAL CAVITIES.

The prepartion for the first class (labial cavities), which involves only one surface of the tooth, differs only from the usual preparation in that the walls of the cavity must be *perpendicular to the respective surfaces* of the tooth which the lines of the wall intersect. This preparation gives a body of porcelain whose lines are perpendicular to each other, thus giving to the inlay all possible strength, obviating the acute angle (or thin fragile edge), which is to be avoided at all hazards.

Plate II, Figure A, shows a full view of this preparation.

Figure B shows a cross-section from the incisal edge to the gingival border, illustrating the angle of the walls of the cavity in relation to the surface of the tooth.

MESIO-LABIAL.

Inlays for cavities of the second class, which involve the labial and approximal surfaces (but not the lingual) are inserted without a separation of the teeth. Plate III, Figures D and E, show the method of preparation with the retention, which is obtained by means of a groove in the bottom of the cavity, extending lengthwise of the tooth. It will be noticed that the incisal and gingival borders of the cavity are at right angles to the approximal surface. This gives a solid body of porcelain, which is very essential to the life of the inlay. Figure F shows the inlay with the retention ridge.

The cross-section, Figure E, shows the groove for retention.

MESIO-LABIAL-LINGUAL.

Cavities of the third class (mesio-labial-lingual), give the best opportunity for artistic results. In this class, we not only extend for prevention, but for retention also. These fillings should be inserted from the lingual surface, and the extension

PLATE IV.

for retention must extend to the firm tooth substance. A slight grooving in the floor of the cavity near the margin on the lingual surface, as shown by Plate IV, Figures G and H, will give a perfect retention from all lateral pressure. Figure I shows the ridge on the inlay.

The walls of the cavity, from the lingual surface to the labial, must be slightly V-shaped, which will avoid loosening from lingual pressure. Labial strain will not be sufficient to disturb it.

Cavities of this class can approach the incisal edge much closer than would be safe in preparing for a gold filling. It is the force of the blow in the operation that weakens the enamel prisms, thus causing a gold filling to fail. But, if the enamel rods are left in perfect condition and an inlay that exactly fits is cemented in, then they have nearly, if not the same support they had before the ravages of decay set in.

MESIO-LABIAL-LINGUAL-INCISAL.

Cavities of the fourth class (mesio-labial-lingual-incisal) are the most difficult, and require a great deal of good judgment, skill and patience.

Plate V, Figure J, represents a typical preparation to illustrate this class of cavities. The formation is such that most of the retention is obtained by means of grooves, thus avoiding a deep seat in the tooth which not only encroaches on the pulp so as to menace the life of the tooth but also weakens the walls and necessitates a wide separation to admit removal of the impression and insertion of the filling.

The preparation for this class of cavities, as illustrated by Plate V, is as follows:

After the margins for the labial and approximal surfaces are secured, the extension for retention on the lingual surface is started from the incisal edge, gradually sloping back to the firm tooth substance near the gingivo-lingual border, keeping well in mind that the walls must be perpendicular to the surface of the tooth. For this preparation we use first the Gem Cavity Point No. 13, S. S. W., followed by the Fissure Bur No.

PLATE V.

57; then the Fissure Finishing Bur and for the final margin when accessible, use the Arkansas Stone Point No. 5, S. S. W. The Pear-shaped Bur is used for retention groove.

Disks can be used to outline the cavities, but the final adjustments of the margins should always be made with the Arkansas Point or Fissure Finishing Bur.

Retention from lateral strain is obtained by grooving into the base of the cavity as illustrated by Figure K, which is a cross-section of Figure J.

A cavity prepared on this principle will not require a separation to remove the impression, or to insert the filling.

It will be readily understood that the principle of retention is *grooves* instead of a deep seat in the cavity. A groove should be made wherever it will resist the strain of mastication.

The grooves must be made so that the impression *will draw*. The cuts are intended to illustrate only the typical cases and make clear the principles involved. The advantages in this system of cavity preparation are: that a groove or depression at points in the cavity will not endanger the pulp and give a much better retention for the filling than the ordinary saucer-shaped cavity. It also avoids the necessity for a wider separation than for gold.

(To be continued).

A CASE IN PRACTICE.*

BY W. BUZZELL, D. D. S., PORT CLINTON, OHIO.

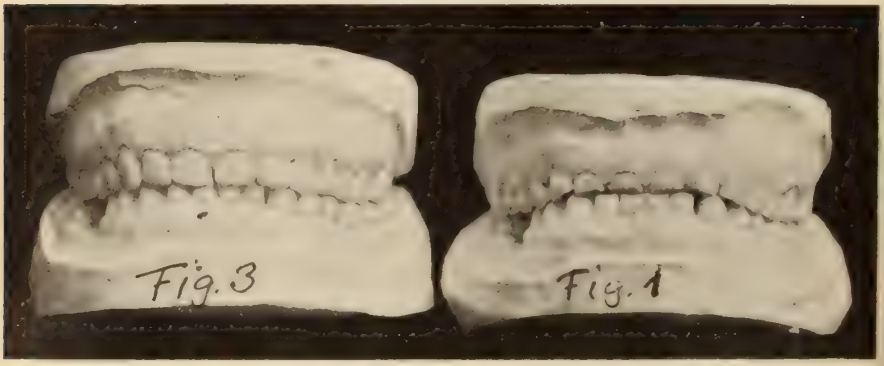
The accompanying photographs illustrate a case which came into my hands last winter. From Figs. 1 and 2 it will be seen that the crowns of the ten anterior upper teeth have suffered extensive erosion. The incisors are destroyed nearly to the gum line, the original pulp chambers being filled with secondary dentine. The cuspids, from a point at about two-thirds their length, are eroded lingually to the gum. The first bicus-

*Presented at the Northern Ohio Dental Association, June, 1903.

pid was eroded till it had something of the shape of a short cuspid; the second bicuspid similarly affected, but to a less degree. The molars of normal shape and size, except the left first molar, which had a large amalgam filling.

Of the lower teeth, only the incisors were affected, and there the erosion only amounted to a slight cupping at the cutting edges, and they were restored with cohesive gold.

Endeavoring to find the cause for such extensive destruction, I tested with litmus paper and found a very faint acid reaction, which seemed to me entirely inadequate to produce such a result as is shown.



Later on I learned that the patient had made a prolonged use of an inhalant for a pulmonary trouble, the vehicle for the medicament being ammonium chloride. This seems to me the probable cause of the trouble, the ten anterior upper teeth, with the four lower incisors, being the ones most exposed to the action of such an agent.

Mechanical abrasion was out of the question.

It will be noticed that the bite of the anterior teeth is abnormally short, so that at first it seemed impossible to put on porcelain crowns. But after considerable study of the case I proceeded as follows:

Beginning with the bicuspids, I made gold tips with retaining pins, which were cemented to the abraded surfaces, restoring them in shape and length, approximately at least.

This method of restoration was employed, rather than the more easily made shell crown, to avoid an unsightly display of gold.

In doing this I opened the bite considerably, thinking that in as much as the molars were of their normal length, the abnormally close bite of the anterior teeth had resulted from the absence of the resistance of the abraded bicuspids, and that if these teeth were restored approximately to their original shape and size, the action of the muscles would bring them into proper occlusion again. In this my expectation was fully met, for in a few days the molars were in normal occlusion and room was made for rather short Davis crowns. The cuspids were

restored in a manner quite similar to that of the bicuspids. Nothing was done with the left second bicuspid. It is badly decayed and had been filled with amalgam, and will eventually be fitted with a shell crown.

Figs. 3 and 4 show the case as restored. As the gold does not cover the labial surfaces of the cuspids and bicuspids, it is not conspicuous and would ordinarily be unnoticed.

METHOD OF MAKING GOLD TIPS.

Perhaps a few words on the manner of making the gold tips may not be amiss. For the first bicuspid the enamel edges were beveled slightly, as would be done in preparing a cavity for filling. Thin, pure gold was burnished down to the abraded

surface and over the sides of the tooth. Two small holes were drilled through to a depth of about one-eighth of an inch, avoiding the pulp. Pieces of retaining wire were inserted, allowing them to project a little, waxed, invested and tacked with a minute piece of solder; then replaced and accurately burnished into as perfect contact as possible to the tooth, and over the sides of the tooth, forming a shallow cup on the under side. Cusps were struck up, adjusted to position and the space between filled with solder. The projecting ends of the pins are of assistance in holding the parts in their proper relation while soldering, and the base of piece being cup-shaped beneath, it is easy to avoid flowing the gold on the under side.

The piece is then placed in position, dressed down to the tooth, polished and cemented to place.

THE IDEAL CROWN AND THE METHOD OF MAKING IT.*

BY M. C. RAMALEY, D. D. S., CLEVELAND, OHIO.

In preparing root for the all-porcelain crown, grind to within one-twentieth of an inch of gum line on lingual side of root. On the labial side, cut slightly underneath the free margin of the gum.

Ream root for post. Use iridio-platinum post metal, square, of the same thickness as 15-gauge round wire. Flatten slightly with hammer and file to taper as shown in Fig. 1. To this post solder, with pure gold, a platinum disc about one-twentieth of an inch larger than face of root (Fig. 2).

Pass the post into the root and with a burnisher work disc close to root face. Then, using instruments similar to those in Fig 3, work projecting portion of the platinum carefully and closely to root, to form a band as shown in Fig. 4.

Cut away projecting portion of disc on labial side, allowing

*Demonstrated at Northern Ohio Dental Society, June, 1903.

it to come only to the edge of root, and thus form a partial band as far as deemed best. For this purpose, use 32- or 34-gauge platinum, which, when annealed, may be easily worked to fit very closely to root (Fig. 5).

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

When this has been done, take a piece of platinum and bend to fit as closely as possible over band, and solder this to band as a reinforcement. Select facing or plain tooth as case may demand, and grind to fit (Figs. 6-7).

Fig. 5.

Fig. 6.

Fig. 7.

Fig. 8.

Press pins closely against post and invest parts sufficiently to hold together. Solder pins to post with pure gold or a platinum solder, using as little solder as possible.

The case is now ready for applying porcelain, which should be mixed according to directions which accompany each outfit.

Mix thin and apply, allowing each crevice to fill up, then absorb liquid with napkin and apply more body, until the contour has been nearly reached; then bake, not to the full fusing

point, however, the first time, but rather biscuit. After baking allow to cool gradually, when more porcelain should be added. Three bakings may be necessary. When the crown is completed it may be set as any crown, with cement or gutta-percha, at the will of the operator.

The instruments used are made from worn-out excavators and may be made by any operator of ordinary ability, and will be found useful in making Richmond crowns. The only two used by the writer, in addition to the ordinary burnisher, are shown in Fig. 3.

The claims for the crown are: Easy construction, extreme cleanliness, acceptability to tissues of mouth, and wide range of application.

Fig. 9.

Fig. 10.

Figs. 9-10 show other uses of crown on broken roots. In fusing, the crown is set post downward in a portion of a clay pipestem, cut short and ground or filed to suit case, as shown in Fig. 8. A little practice will make it easy to apply this crown to cases to which no other crown is applicable.

SOME THOUGHTS ON CAVITY PREPARATION.*

BY H. C. KENYON, D. D. S., CLEVELAND, OHIO.

Professor Dental Anatomy and Operative Technics, Western Reserve University, Cleveland, Ohio.

Before entering upon the discussion of the subject of the essay, I wish to disclaim any honor of originality in the prin-

*Read at Northern Ohio Dental Society, 1903.

ciples and forms discussed, and to say that my reason for bringing such a common, everyday subject before you for discussion is the fact that we are constantly being called upon to remove and replace fillings that have served only a fraction of the time they should and would have served had the cavities been properly prepared in the first instance.

The Committee on Operative Technics of the Institute of Dental Pedagogics recommends the following outline as a model for teaching procedure in cavity preparation; and I introduce it here because it contains certain items which I wish to discuss.

First.—Establish the cavity outline.

Second.—Remove the softened dentine.

Third.—Give the cavity its proper shape.

Fourth.—Trim and smooth the enamel margins.

Fifth.—The cavity toilet.

Under the third heading, that of shaping the cavity, Dr. Black calls attention to three ideas of form which, when embodied in the design of the cavity, he designates Resistance-form, Retention-form, and Convenience-form.

PROPER RESISTANCE-FORM.

One of the most important steps in the preparation of all cavities which open upon the occlusal surfaces or the incisive edges of the teeth is that of obtaining the proper resistance-form. This consists in so shaping the cavity that the gingival or the pulpal wall, as the case may be, will be perfectly flat if possible, and if not, then as nearly so as the circumstances will permit. Besides being flat, this wall of the cavity, which will furnish the seat for the filling, should be as nearly as possible perpendicular to the direction of the force which the filling will have to resist. In most instances the direction of this force will be parallel with the long axis of the tooth. This insures the filling against being crushed out of the cavity by the deflection or glancing of the force applied against an in-

clined plane. This is especially true in proximal cavities in bicuspids and molars, where we so often find the gingival portion of the filling sprung out over the gingival margin and away from the axial wall. In simple occlusal cavities whose diameters are less than their depths, little attention need be given to the pulpal wall, but no so in such cavities whose diameters are greater than their depths. Flatness of this wall is essential in such cases to prevent rocking of the filling under the stress of mastication.

RETENTION-FORM.

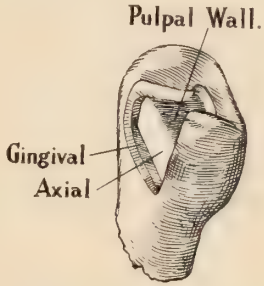
By retention-form is meant a shape such as will grasp and hold the filling from being pulled or crushed out of the cavity. This form should be obtained by the relation of the various walls to each other and not by employing deeppits, grooves, or so-called undercuts. All except the gingival and pulpal walls of the cavity should be cut on straight lines approximately parallel with the axial line of the tooth and should meet the gingival and pulpal walls at an angle and not with a long sweeping curve such as is made with round burs. If the various walls are made as flat as possible and are cut so as to have the proper relation to each other, they will meet in such a manner as to form line—and point—angles which will be sufficient for convenience in starting fillings, and the walls themselves will furnish sufficient retention without resorting to the use of pits and grooves. It is my opinion that more fillings come out because pits and grooves are cut in the cavities than because they are not. By this statement I mean that in those cases where the fillings come out because of lack of retentive power in the cavities, most of them come out after walls have broken away which were weakened by grooves which might better have been omitted. I believe that many of us give too much attention to obtaining retention-form and too little attention to obtaining resistance-form, especially in the preparation of proximal cavities in bicuspids and molars. In so doing we cut retention grooves much deeper than the demands of retention require and in places where they ought not to be, thus weakening rather than strengthening our filling.

CONVENIENCE-FORM.

Convenience-form is the subject of another paper and will not be discussed here more than to say that the amount of cutting for this purpose will be determined by the skill of the operator and the needs of the particular case.

APPLICATION OF PRINCIPLES OF PREPARATION.

To apply these principles to the preparation of a particular cavity I have taken a mesial cavity in an upper bicuspid. This is a proximal decay and when the preparation is completed will be a complex proximo-occlusal cavity, the occlusal portion, occupying the central groove, being cut only sufficiently wide and deep to insure the necessary strength. The pulpal wall of this



portion of the cavity should be flat and the buccal, distal, and lingual walls should be straight from the occlusal surface of the tooth to the pulpal wall and should meet this wall at an angle which is a little less than a right angle. This will make the cavity a little wider at the bottom than at the occlusal margins, and only a very slight difference here is necessary to thoroughly lock the filling against displacement in the occlusal direction. This portion of the cavity should be wider bucco-lingually at the distral extremity than at the middle, to prevent the filling being displaced towards the mesial by the force of mastication.

In the proximal portion of the cavity, the buccal and lingual enamel margins should be nearly parallel and should meet the gingival enamel margin in a curve and not at an angle. The buccal and lingual cavity walls, however, should be cut on straight lines from the occlusal margins to the gingival wall.

meeting this wall at a sharp angle. The gingival wall should be flat and without grooves. In the bucco-lingual direction it should be at right angles to the long axis of the tooth. In the mesio-distal direction it should incline slightly toward the distal. This brings the axio-gingival line-angle at a little deeper level gingivally than the margin of this wall and prevents the filling being deflected outward at the base by the force of mastication, taking the place of the time-honored groove across the base of such cavities. This inclination does all that a groove can do in the way of retention and does not leave a thin unsupported gingival margin. This method of preparation supplies two angular pockets opposite each other at the bucco-gingival and the linguo-gingival angles which are convenient and sufficient for starting the filling.

I have said little in this paper about the preparation of cavity margins, and nothing about extension for prevention or for convenience, and many other important considerations in the proper preparation of cavities, it being my intention only to emphasize some thoughts regarding the internal form of cavities rather than their outlines.

DISCUSSION.

Dr. H. F. Harvey, Cleveland, Ohio.—Dr. Kenyon speaks of a cavity in the occlusal part of the tooth and says that the bottom of the cavity should be flat if the depth is less than the diameter and that if the diameter is less than the depth it really does not matter about the form. I think in that case the bottom should also be flat. Naturally the larger cavities are concave, but they should not be left so. He says in cutting through the central groove the pulpal wall should be flat and that the buccal and lingual walls should be cut at a little less than at right angles with the pupal wall. In my opinion it should be at least a right angle.

The essayist also speaks of the gingival wall being cut so that it is a little lower in the interior of the cavity so that the filling cannot slide out. This is all right from a mechanical

standpoint, but it is not necessary that you should bevel this wall in this way.

Dr. D. A. Allen, Toledo, Ohio.—I would like to ask the essayist a question. While I agree in the general outline given, for instance take a case where there was a filling on the other side of the tooth and it was a good filling, how can you cut it without cutting the filling?

Dr. Kenyon.—I find in most all bicuspid teeth you can get dovetailed anchorage without going so far into the tooth as that. It is not necessary to cut in so far as this, provided there is not a groove in the tooth. If there is a dovetail formed you will have quite sufficient retention up to that point. You can cut another dovetail beyond that. The new filling you can weld on to the old filling with proper manipulation and proper preparing of the old filling.

Dr. J. F. Stephan, Cleveland, Ohio.—In cutting a groove into the gingival wall for a retention of the filling the wall has not only been weakened but its nourishment cut off. A groove is only as strong as the width of its cross section.

Dr. Owens, Cleveland, Ohio.—I think we must depend upon some retention besides perfect adaptation. Parallel walls without retention grooves are rather unsafe things to depend upon. Hundreds and thousands of cavities have been filled and preserved teeth for 10, 15, 20 and 30 years. This ought to count for something. If we are going to change our method of adaptation and retention of the filling we had better be very careful and study the matter over before going into this new method. We had better stick to the grooves. If the groove is well filled you are sure it is not going to slip out. I do not approve of cutting the enamel away.

Dr. Corydon Palmer, Warren, Ohio.—I sometimes feel like asking what is the matter of Dr. Black with his extension for prevention and all these cut up sort of things. My own view of the subject is to be careful and not cut away any more of the tooth and not make any greater cavity than you can get

nice grooved walls and not undertake to cut it into planes or angles but make good margins. There is no need of cuting up all sort of capers and disfiguring the teeth. Save as much of the margin as you can. If you have good instruments you can put the gold in so that you could not knock it out with a hammer. There is no necessity for such grooves and under cutting and angles in a cavity. When there is a cavity of decay and it extends above the gum border why do you cut away until you get away below it? Why not preserve the border of the cavity, smooth it out nicely and save as much of the tooth as you can? That is my rule of saving teeth.

Dr. J. F. Stephan, Cleveland, Ohio.—I am sure if we were all as skillful as Dr. Palmer it would be unnecessary for us to cut angles and shape the cavities as many of us find it necessary to do. Dr. Palmer has a reputation that is enviable in the manipulation of gold. If we could follow in his footsteps we should certainly have much praise in all we do.

Dr. Dunn, Warren, Ohio.—I agree with Dr. Palmer that this extension for prevention is often cutting away good tooth substance that we may wish we had after awhile.

Dr. Taft, Ann Arbor, Mich.—I feel inclined to take a mean between Dr. Palmer and the other gentlemen who have spoken and described their methods. In things like this we are likely to run to extremes and overlook points that should receive attention. In the preparation of all cavities for fillings as Dr. Palmer has said, it should be accomplished with as little loss of good dentine and enamel as possible.

In all instances unless the enamel is very strong and firm and will not yield readily to pressure it is well to cut away all unsupported enamel, all enamel not supported by dentine. In cutting grooves in the buccal or lingual walls the cutting goes through the dentine and the enamel has not the support it ought to have.

Another point: The canals of the dentine should never be cut across. This was referred to but not emphasized as much as it should be. Whenever it is possible the conservation of

the nutrient substance is a very important factor in the preparation of cavities.

Dr. C. R. Butler, Cleveland, Ohio.—Two or three points I would like to refer to.

We will suppose these walls to be parallel; this is a simple case. But suppose it is disintegrated we may have some of the enamel rods that are unsupported leaving a weak border that is apt to be chipped off soon afterward or in the operation.

Some one says, suppose there is a filling on the other side of the tooth that you are obliged to fill; are you going to knock the other fellow's filling out? No. Let it alone. Put a wedge in so you can not knock the filling out. Make it a compound filling and not knock the other fellow's filling out.

Dr. Palmer, Warren, Ohio.—Suppose you have a filling on the posterior part; if it is worth anything, if it is the filling it ought to be, if you cut down into it where you want to join on to it if it is a right kind of a thing and your work is right you can put that filling right on to it and it will attach as strong as though it was a new filling.

Dr. H. C. Kenyon, Cleveland, Ohio.—The discussion this paper has brought forth shows the misconception of it. I anticipated this and that is why I brought my models and prepared the drawing. I do not claim infallibility, but I do claim that the objections have been based on misconception. I agree with some of the criticisms that have been made. The subject of cavity preparation is a very big one; cavity margins would be sufficient for one paper. I have described a typical cavity. We do not find this every time. I do not believe it is necessary to have as much incline as is represented in the drawing. This is my first attempt at drawing and consequently does not express my ideas exactly. My idea is that very little retention is needed in that cavity.

In regard to the occlusal cavity where the cavity is deeper than wide and it is not necessary to pay so much attention to the pulpal wall. That of course is relative. Also many gold

fillings could be made with perfectly round bottom, but I believe it makes a better filling to make a flat bottom.

As to whether this style of filling is practical I have not been in practice long enough to say whether it is practical or not. I do not see anything very radical about this style of preparing a cavity. More fillings are lost because the walls have weakened on account of cutting grooves than because they are not cut at all. If you have a rectangular space with good clear angles and the inner portion is a little larger than the outer portion what more do you want to hold a filling in place? On general principles, the less cutting that can be done and get a mechanically proper-shaped cavity to hold your fillings, the better. In all cases where there are flat walls instead of grooved walls the filling has a better chance of staying in.

THE USE OF A FEW VALUABLE DRUGS IN DENTISTRY.*

BY C. R. BALDWIN, D. D. S., CLEVELAND, OHIO.

Being interested to some extent in drugs for treating dental lesions in conjunction with mechanical methods, also to the use of drugs for constitutional troubles pertaining to dental disturbances, it occurred to me that on this occasion it might be well to present some conclusions I have arrived at concerning certain drugs pertaining to dentistry. If not distinctly original, perhaps some of you may find certain features of this paper valuable.

New drugs are being discovered which are proving very useful to the dental profession and should meet with our hearty indorsement. I will not describe the physiological action of the drugs that I mention, but give the uses of them pertaining to dentistry.

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*Read before the Northern Ohio Dental Society, June, 1903.

DRUGS OF VALUE IN ANEMIC CONDITIONS.

When patients present themselves with low vitality, paleness, poor appetite, diseased gums and caries, it is not only necessary for us to place the teeth in a normal condition, but to administer drugs to build up the system, and increase the number of red corpuscles.

Fowler's solution of arsenic in doses of two to eight drops three times a day, commencing with two drops and increasing a drop every fourth, then decrease in the same way. This drug is given at intervals of one or two weeks as the case may be, or strychnine* sulphate one-sixtieth grain three times a day before meals for three or four weeks. Either one of these drugs will be sufficient to tone up the system. Iron preparations will also be necessary.

Dialized iron being the least harmful to the teeth should be prescribed in doses of five to thirty drops three times a day, following each dose with a saline mouth-wash. This drug should be given until paleness diminishes and color returns.

The teeth and gums should be treated with an antiseptic mouth-wash.

The bowels kept in good condition and plenty of out-door exercise is necessary to bring about the desired results.

DRUGS OF VALUE IN NEURALGIA.

In most cases neuralgia is relieved by removing the cause In cases where the cause cannot be ascertained, the following drugs will prove useful: Castor oil in teaspoonful doses one hour apart until five doses have been taken. If pain still continues, repeat. The physiological action of this drug on the nerves is unknown.

Another effective remedy is antikamnia in five-grain doses

*When organic diseases exist, strychnine should not be used during the period of acute inflammation as in subacute neuritis, as the nerves are already inflamed. Gudes Peptonoids is one of the best things to be used in such cases. Iron is very good, dialized being the mildest form, it lacking in astringency but is very easily precipitated and is largely used by some for anemia. The bowels must be watched and laxatives given. Frontal headache is liable to occur.

one hour apart until relieved, three or four doses as a rule being necessary for relief.

When I prescribe this remedy, I also prescribe a mild cathartic such as epsom salts and a hot mustard foot-bath. If there is a gouty diathesis with neuralgia, wine of Colchicum* in doses of fifteen or twenty drops three or four times a day.

If there is constitutional or general functional dyscrasia with neuralgia it must also be relieved, tincture valerian and gentian equal parts in teaspoonful doses or potassium bromid five grains in water from two to ten times a day, for the paroxysm if any digitalis in five-drop doses.

When drugs fail and cause cannot be ascertained, it will sometimes be necessary to resort to a surgical operation, removing part of nerve affected.

HEART STIMULANT.

A good and effective heart stimulant is ammonia and amyl nitrate in equal parts. The physiological action of each of these drugs is well known. Combining them, makes amyl nitrate a much safer remedy than when used alone. This compound is very valuable to use on patients who have a tendency to faint often while operating. Also in cocaine narcosis one inhalation every five minutes for a half hour or longer if the case requires. I have never needed to administer it more than three times, five minutes apart. Its effect is very rapid and will do away with hypodermic injections a great many times.

AN ASTRINGENT.

Adrenalin is practically a new remedy and a very valuable remedy for us as dentists. It is manufactured by The Parke Davis Co., of Detroit. This drug is the active principle of the suprarenal gland, taking two thousand five hundred glands to make a pound. The glands are obtained from the ox The drug is placed on the market as adrenalin chloride and can be obtained in one-ounce vials.

*I suppose the essayist means to give Colchicum in the form of wine of the root as it never ought to be used in substance.

The uses of adrenalin chloride are: First, stopping hemorrhage when using the pressure method for removing the pulp carrying into root canal with broach wrapped with cotton or a small amount of the solution can be added to the cocaine mixture which will make the operation almost if not entirely bloodless. Second, when removing calculus and bleeding ensues, saturate a pledget of cotton with the solution and apply to gums for a short time. Then the removing of tartar can be accomplished with very little difficulty as far as bleeding is concerned. Third, when a portion of hypertrophied gum tissue is in a cavity and desiring to remove it, place a pledget of cotton saturated with adrenalin solution in cavity leaving it for a few minutes when the portion can be removed without hemorrhage and the operation completed as desired. A little pressure is needed when using adrenalin. In severe cases of hemorrhage, following extraction of teeth this drug may not be as effective as astringents commonly used, but for cases just mentioned it is far superior on account of its nonirritant effect on tissue.

ANTISEPTICS.

There are so many antiseptics on the market that it confounds one to know which is the best. I have selected glyco-thymoline on account of its alkaline reaction. This compound can be used as a general antiseptic. In treating abscesses with or without fistulous opening I do not hesitate to use it full strength. After washing out canal with pyrozone when there is no fistulous opening I force it into the canal with unvulcanite rubber, drying it out with cotton on a broach. Then insert a few threads of cotton in canal saturated with oil of cloves leaving it for a day or two and treat the tooth two or three times as the case may be before filling canal. In abscesses with fistulous opening, cleanse the canal with pyrozone, then fill the syringe with warm distilled water and force through fistulous opening, then use glyco-thymoline in the same way, followed by eucalyptus oil and fill canal and fistula in the usual way with chlora-percha and gutta-percha points. I also use it

in treating stomatitis, gingivitis, and other inflammations of the oral cavity, using it full strength as a mouth-wash.

In treating diseases of the antrum, I find that I obtain better results from its use than any other antiseptic, using a twenty-five per cent. solution daily until the disease is cured. The methods for keeping the antrum open are well known and I will not attempt to describe them here.

TO CONTROL PAIN AFTER EXTRACTING.

A valuable prescription when there is pain after extracting, also for use of spongy gums, is as follows:

℞ Carbolic acid.....gr. xv.
Boracic acid .....ʒss.
Eucalyptus oil.....gtt. x.
Tinct. opii.....ʒ j.
Tinct. krameria.....ʒ j.
Aqua dest .....q s f o j.

To be used as a mouth-wash four or five times a day. I always prescribe this after extracting a number of teeth.

LOCAL ANESTHETIC.

A prescription for a local anesthetic is as follows:

℞ Atropine sulph.....gr. 1-10
Carbolic acid.....gtt. ij.
Aqua rosae.....gtt. x.
Aqua dest .....ʒ j.

To twenty-five drops of the above solution add ¼ grain cocaine. This makes about a two per cent. cocaine solution; each time mixing a fresh solution. I have been using this formula for nearly seven years with no sloughing or toxic effects to speak of while with other preparations of cocaine I have had trouble. I never use a local anesthetic on an ulcerated tooth, as I believe trouble often arises more from this source than from the effects of the cocaine solution.

SEDATIVES.

Chloral hydrate I have found by repeated experiments to meet all the requirements needed to relieve pain with the ex-

ception of persons having fatty heart or pulmonary diseases on account of its producing almost a natural sleep which is calm, dreamless and refreshing, and it has no unpleasant after effects. I use it often for neuralgia, pericementitis, severe pain from abscesses and pain from the eruption of third molars, administering from ten to twenty grains to adults and four to seven grains for children. This dose is small and may be repeated, and better results obtained, than by giving the maximum dose.

ODONTALGIA.

A mixture of equal parts of chloral hydrate and camphor makes a very valuable anodyne when applied locally for odontalgia, saturating a small quantity of cotton with the mixture and placing it in the cavity. Also for pericementitis applying it to the gum over affected tooth. It also can be used for those unpleasant after effects following devitalization and filling the canal after we have exhausted all our skill and knowledge trying to save a badly broken down molar, by applying it to the gums often, which can be done by the unlucky victim.

DISCUSSION.

Dr. L. L. Barber, Toledo, Ohio.—There is very little room for discussion of this paper, but I will say, however, that the essayist has said a number of things that it would be well for a great many of us to read and re-read. Most of us are too prone when a patient comes for considerable work to be done to simply go to fixing the teeth, having no regard for the general condition of the patient. Many operations could be made much more painless by giving attention to the general toning up of the patient's health. If a patient is going to a hospital to have a slight operation they will give that patient from twenty-four to forty-eight hours preparatory treatment, and yet the same person will come to a dentist for an operation that is a great deal more painful and have it done without any

preparation whatever or any attempt to put the body in the proper condition to undergo the strain.

The formula Dr. Baldwin gives for a mouth-wash after extraction I know is a good one and is also a good remedy for soft gums. His formula for local anesthesia is out of my line as I do not use local anesthesia. I presume that some will raise objections to the use of carbolic acid. I do not think there is enough carbolic acid in the formula to do any harm at all. The essayist speaks of iron for anemic conditions. We all admit this to be correct. The giving of strychnine and arsenic should not be done promiscuously. In the main, the drugs he speaks of and the method of administering them in my judgment would be perfectly legitimate and possibly about as good a thing as we could do. I would emphasize one point, and that is that we should pay more attention to the general toning up of the patient before undertaking any operation.

Dr. H. C. Kenyon, Cleveland, Ohio.—The doctor spoke of difficulty in stopping hemorrhage after extraction. The main thing that prevents the stopping of the blood is the fact that it flows so fast that it washes away the preparation put in. Carbolic acid to be antiseptic must be at least five per cent. solution. I cannot see the need of using carbolic acid at all, as it will cause sloughing.

Dr. C. R. Baldwin, Cleveland, Ohio.—I have used carbolic acid in the proportions mentioned in my paper and have experienced no difficulty or no sloughing to speak of.

PRESERVATION OF THE DENTAL PULP.*

BY C. STANLEY SMITH, D. D. S., CINCINNATI, OHIO.

It is the purpose of this paper to describe the treatment of the several lesions of the living pulp, that may be said to be favorable to conservative methods.

It is contended by many of the profession that such a small percentage of these pulps can be restored to a healthy condition, that it is not worth the effort to try any. This idea is woefully erroneous. Many can be brought back to their normal condition.

In consideration of all these cases, idosyncrasy, and the general physical condition of the patient, must not be neglected. Often a congestion of the pulp is superinduced by an inflammation existing in another part of the head and face, which condition must be corrected by systemic treatment before much can be accomplished locally. We are too prone to overlook these very important factors in looking for causes locally.

The affections of the living pulp are attended primarily or secondarily with inflammation, which is similar in character to inflammation in any other part of the body, with the exception of the pulp's disadvantageous confinement in its bony case.

We have accepted the dictum that every cell possesses inherently the power to recover after an injury, provided it be not sufficient to cause immediate destruction; we know also that there is as great physiological resistance in the pulp as there is in any other organ of the body, therefore in these affections (exposed, fungoid and congested pulps) is it not a reasonable deduction, that the removal of the causes and the surrounding of the pulp with a healthy atmosphere will make its recovery very probable?

I think so, and have proven it to my own satisfaction, by treating successfully the majority of cases presented, with a method I shall give presently.

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*Read before the Northern Ohio Dental Society. 1903.

For convenience of description I have divided these conditions into two groups:

First—Acute exposures.

Fungoid pulps.

Second—Congested pulps in filled and non-carious teeth.

In the first group I have classed fungoids with recent exposures on account of the similarity of their treatment.

PROCEDURE.

After application of rubber dam, I remove every particle of carious matter and syringe cavity with hydrogen dioxid, preventing the recurrence of gases and bacteria in and about the pulp chamber. Next I apply a small quantity of creosote (German) to the exposed surface of the pulp, which is now ready to receive what I shall term the "capping," a velvety paste composed of boracic acid one part, zinc oxid two parts, mixed with creosote; this is spread over the exposure very delicately with a pellet of cotton. Great care must be taken to avoid the slightest pressure. I now flow over this oxyphosphate of zinc, partially filling the cavity. When this has hardened sufficiently I remove surplus, if any, and fill remainder of cavity with a permanent material. Apply counter-irritant (iodine and aconite) on gum over affected tooth and impress upon the patient the importance of taking the proper hygienic precautions to prevent taking cold. Prognosis is most favorable.

CONGESTED PULPS.

Under the heading of congested pulps I include all the simple inflammatory conditions (pulpitis, hyperæmia, etc.). True hyperæmia does not exist as a distinct lesion, it is one of the successive changes in the process of inaflmmation.

In congestion of pulp in a filled tooth I remove filling immediately, cleanse cavity of all carious substance. I then lance pulp with nerve broach, allowing the products of the inflam-

mation to escape. The next step is to apply creosote on a pledget of cotton, seal cavity, use counter-irritation and dismiss patient for two days. If tooth has given pain during that interval, I reopen cavity, syringe with hydrogen dioxid, apply creosote and counter-irritation as before. A second application will usually quiet the pulp, which can be "capped" and tooth filled with a non-conducting material until pulp has become normal (time varies from one to three months) when permanent filling is inserted.

Treatment of congestion in non-carious teeth is same as just described except that I drill cavity into pulp.

PROPERTIES OF THE CAPPING MATERIAL.

A word about the properties of the "capping" and I am finished. The boracic acid is a refrigerant, permanent antiseptic, reducing inflammation; the creosote is a diffusible antiseptic and destroyer of gases; the zinc oxid is bland and non-conductive of thermal stimuli. The product formed by their admixture is so soft and velvety, as to admit of its perfect adaptation without pressure.

With an accurate diagnosis and judicious use of this "capping" many pulps can be preserved that would be doomed to destruction.

DISCUSSION.

Dr. M. C. Ramaley, Cleveland, Ohio.—Cases of this kind are very often overlooked. From the fact that a tooth with the pulp saved alive is stronger and more acceptable in the mouth than one with the pulp destroyed, we ought to pay more attention to methods of trying to save the dental pulp. I would advise in the place of using oxyphosphate of zinc to use oxychloride of zinc to seal the cavity, being careful not to allow the oxychloride of zinc to come in contact with the pulp. If we can save the pulp alive we have done something that is of value to the patient.

Dr. Henry Barnes, Cleveland, Ohio.—Many years ago I tried to save pulps. Out of all I saved there remains one that I know of; the rest are dead.

Dr. W. A. Price.—There is a great deal of danger in being too hasty in taking out pulps because we can do it so easily. I do not believe that many can fill 25 per cent of the apexes successfully. Very many times we think we keep the canals asceptic when we do not.

Dr. C. R. Butler, Cleveland, Ohio.—The dental pulp is in the tooth for some purpose or it would never have been put there. If it has an office, then as dental surgeons we should take care of it the same as we take care of any other lesion that happens to the tooth. Because it can be so easily removed does not follow that this should always be done.

Dr. G. N. Wasser, Cleveland, Ohio.—Five years ago Dr. Owens read a paper in which he had kept a record for twenty years of capping pulps. He is a great advocate of the preservation of pulps, even after they have been exposed. He uses oxychloride of zinc. Mix it very thick, make a pellet, pack it on the pulp carefully with cotton and then put oxyphosphate over that. Dr. Owens' method is this in detail: After removing all the decay possible he wipes the cavity out with creosote, then places over that chloro-percha to seal it, then covers that with tin-foil and places oxychloride of zinc over that.

Dr. C. Stanley Smith, Cincinnati, Ohio.—We must take into consideration the thermal changes which would cause expansion, as this would eventually kill the pulp.

Dr. Taft, Cincinnati, Ohio.—I would endorse the principles brought out in this paper, as the saving of pulps is a very important matter and also I regret to say one that has been given very little attention by a great many of the profession, and some kill every pulp that they can fine, but I am gratified now to learn that so many of the young men are beginning to

see the importance of saving the pulp alive and are studying methods by which this may be accomplished. Of course all septic matter should be scrupulously removed in every instance. In regard to medicaments employed, great care should be used. If the eye were treated as carelessly as exposed pulps are treated, one-half the people who are treated would lose their eyes. We should take the same care and the same skillful manipulations where exposed pulps are treated.

Dr. J. R. Owens, Cleveland, Ohio.—I have a great deal of reverence for the dental pulp and I believe in retaining it wherever possible. However, we should not take chances where the possibilities are that the pulp will die. First remove the disintegrated tooth structure from over the pulp where we expect to find exposure, removing it as completely as possible, endeavoring not to wound the pulp. Then sterilize with creosote and dry it out. If the pulp is exposed, take a piece of tin-foil and flow gutta-percha over it and quickly place it over the exposure and press gently in place. I use oxychloride of zinc. Mix just enough to cover over the exposure nicely. I permit that to set and then prepare another batch of the cement and fill up the rest of the cavity. Dr. Taft asks why the cement must be brought to such stiff consistency. It does away with free chloride and consequent irritation.

Dr. J. F. Stephan, Cleveland, Ohio.—I had a pulp capped twelve years ago which is pust now as much alive as it ever was. Judgment should always be used as to whether the pulp is healthy and whether by treatment it has the possibility of becoming a healthy pulp. Where the pulp is healthy and is exposed by accident we ought to make every effort to save it, just as a surgeon should make every effort to save life even though he feels that the effort is one chance in a thousand.

Dr. C. Stanley Smith —We find it very convenient sometimes when we have to deal with third molars and upper bicuspids to use conservative methods.

A CRITICAL REVIEW OF SOME CHANGES IN THE TEACHING AND PRACTICE OF DENTISTRY.*

BY B. HOLLY SMITH, M. D., D. D. S., BALTIMORE.

While it is true that the old live in the past, it is also a fact that the active have a legitimate inheritance in the lessons which it teaches. History repeats itself not because of dumb inactivity or because of any fatality in the cycle of events, but because men in all ages have learned lessons of their predecessors. The individual and well-advised act of one man is seldom the result of an impulse having its origin *de novo*, but rather that of an educated and trained creature, who brings to bear upon every act, whether consciously or not, the product of that education and training. Individual attitude of mind softens, wavers and changes as a subject is unfolded and illumined by comment and criticism. God-fearing men learn to respect the opinions and views of others, and the stubbornness born of ignorance melts before the warmth and light of intelligent discussion. In presenting this review of the past, it is the hope of your essayist at least in part, to shift the responsibility of the hour upon your shoulders, and to make what final judgment comes out of the consideration of these subjects a unit composed of individual opinions freely expressed. Let that only be regarded as whole grain, which is able to withstand the friction of the thrashing process; but that the process may be more natural there can be no objection to some chaff.

There is perhaps no analogy in the history of professional organizations and advancement to the organization and development of dentistry in its teachings and practice. This rapid advance is directly traceable to correspondence and exchange of views. There is no gainsaying the fact that even in the day of the locked laboratory door, individual skill existed among the practitioners of dentistry, but no one at that time could have foretold such general excellence as exists to-day.

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At the time of the organization of the National Association of Dental Faculties, we had in this country a number of dental colleges, each pursuing its own plan of teaching, entirely independent of what might be the methods of any other school. There were no entrance requirments, and any one with five years' practice could present himself for graduation after five months' course. Many indeed were graduated without an entire five months' attendance. These men represented professional dentistry in their several sections, and what is stranger yet, many of them still represent it. Indeed, many of our best men of twenty years ago had no college training. Men since that time have acted as examiners, having themselves received no instruction in college; so that not wholly but in part, dentistry was just a little while ago a cult or calling which might be adopted by any individual who had the inclination to do so, and could secure the co-operation of a preceptor and the possession of a few books; the result being that its title was looked upon as the evidence of a partial, often a very meagre culture. To-day no one is allowed to present for an examination to practice dentistry who has not a degree. In many dental societies the degree is a prerequisite to membership, as it is to membership in many examining boards. To secure this degree the applicant must pass an entrance examination equivalent to two years' high school work and spend four years of seven months each in a dental school; if successful in obtaining his diploma here, he must still have his training approved by a State examining board, before he can practice. It reminds one of the husband's answer to wife's telegram: "Mother died this morning; shall be embalm, cremate or bury?" Answer: "Do all three; take no chances." Dental students and mothers-in-law may be under the ban as annoyances, but may there not be another side to such questions?

Medicine embraces many specialties and the possession of the M. D. permits the possessor to practice any or all of them. Not only has he the consent of his associates to make his own selection, but the public does not demand or look for more than his M. D. Yet dentistry, which has only recently aspired to

be a specialty of medicine, demands as much time in preparation for the special degree as does medicine and gives no entrance to the practice of any other specialty; indeed in many States the possessors of its special degree are not allowed by law to prescribe drugs nor administer anesthetics.

It would indeed be absurd in any one acquainted with the practice of dentistry to contend for slack preparation or lack of education in its followers, as it is in bad form for one who desires to be ambitious for the uplifting of his calling to belittle the amount of skill and training required for its successful practice. 'Tis not with any such end in view that we wish to bring to your careful consideration the rapid and extensive advancements in requirements for practicing dentistry to-day.

We have claimed that these advances were accomplished by legislation enacted by the National Association of Dental Faculties, but this body has always been influenced by the demands of the writers and thinkers of the profession at large, and its acts must be regarded as the active and virile expression of the profession itself.

One who has been in constant attendance on the sessions of the Association of Faculties must have been impressed by the avalanche of resolutions offered for extension of course and qualifications, with the readiness of its members to respond to the recognized demands of dentistry; indeed it has often seemed that the eagerness has assumed a form of rivalry, and when the fever was on, advocacy of absurd propositions was not uncommon. Even when men were convinced that extreme measures were being taken, they were only too glad to be registered as voting for them. It often seemed that we did not any of us care to seem to oppose advance. The tide of clamor for extensive advance swept over that body, leaving its members in no very judicial frame of mind. Not a little of this clamor came from those who were anxious to rehabilitate the American degree abroad, and the first thing done after declaring for four years was to cable the fact to the International Dental Federation.

Four years of seven months may not be too long, but the

extension to this point may be only a station on the way to a very much more lengthy term. If we can determine soberly (not when swept off our feet by oratory or intemperate advocacy) by a fair trial that it is necessary to have such a course in order to prepare one for the practice of dentistry, or even that we are making *better* dentists, I will not object; but I do object to such a radical, almost unreasonable demand, just because it has become fashionable or that we wish to placate our friends across the water.

The American of a little while ago entered active life early; he made his impression upon the civilized world in invention, discovery and ability to do things, until now the peoples of the earth stand in awe of him as a rival and are ready to greet him as a helper. How was this accomplished? Not by any dilettante ambling through college, or unnecessary loafing about the seats of learning, but by early application of the healthy enthusiasm of youth to the task to be accomplished.

Sociologists declare that for the good of society man should marry early, yet our educators are trying to make this impossible. We are trying to build up as nearly as possible the condition of late arrival, which has held Europe in a tight grip of inactivity and lack of initiative, to substitute the old man's "What's the use?" for the young man's "Let me try."

Some college men are seeing this and plead for such a readjustment of our educational system as will let the worker obey the old adage, "Rise early." Indeed, the first dental school to revolt against four years' course, was a department of a university whose president, always progressive, has declared for moderation in time spent in preparing for life work. When we recall that the representatives of this very department were most enthusiastic in pleading for extremes, we think we can see the hand of the man who has looked at the question from no narrow or prejudiced standpoint.

What our schools did need at the time of the introduction of the four years' course was an intelligent selection and arrangement of studies. The adoption of a graded course, and most of all the division of classes into sections with more clini-

cal instructors and laboratory men. This would have allowed that individual teaching which is so prominent a part of the instruction of the most successful educators of to-day. Foot ball, baseball, glee and mandolin clubs may foster college spirit, but if it is for these that more time is given, then it is a vain effort to make better dentists by the extension. These teams and clubs have their place in that college life which should be preliminary to our special training, but the years of special training should be seriously employed and fully occupied.

More attention should be paid to preliminary preparation, a premium placed upon it, and your essayist gives notice that he will introduce in the National Association of Dental Faculties a resolution this year, giving a credit of one year to the possessors of the A. B. degree obtained in the chemical-biological course of colleges teaching such a course as that in Johns Hopkins University. Men who have pursued such a course will have studied and mastered more chemistry and physiology than is taught in any dental college in one year. By such action our schools would open a way and invite men to enter dentistry, better equipped to study the scientific portion of it, and of such broad culture as to fit them to represent it in the most intellectual and scientific circles. Then too, we more nearly discharge our obligation to those who think of adopting our profession, by suggesting a trend it preliminary training that will not only best fit them to take up the special training, but incidentally possess them of a broader culture which must always make them more useful, and a greater credit to our calling. Bring the student, with the proper habits of study, to the special work, and (if he is not too old) he will accomplish more than if he should spend more time without such preparation.

It is no insignificant comment upon the preliminary equipment of the dentist of to-day that the Army Examining Board saw fit to examine its applicants in physics and found on the whole that its questions in that branch were not answered so well as upon most other subjects. The examiners must have

known that physics was not a part of any dental curriculum and the standard of admission to dental colleges before that examination did not make it obligatory on the applicant to have passed such a course.

We need that men who essay to study dentistry should begin right, that is, with a fair preliminary equipment and habits of study; then as quickly as possible we should teach them the principles and practice of our calling. We do not want a stale and late arrival, for youth and enthusiasm are of value here if anywhere.

With this we will dismiss so far as this essay is concerned, the consideration of changes in the teaching of dentistry, and consider briefly the more important changes in *practice*.

The introduction of cohesive gold, together with the much later employment of bridge-work seems, from the present retrospect, to have given a stamp to American dentistry strongly leaning to the utilitarian, and in many respects quite at variance with the esthetic. Perhaps the rather too reckless employment of methods and application of materials made possible by this discovery and invention have given cast to this.

Enough that while American dentistry has the credit of being more protective of tooth structure and more capable of aid in supplying deficiencies, it yet has not on the whole had such regard to that higher art, which imitates nature in its ideal conditions. The revulsion against this utilitarianism was most violently shown by the advocates of the "New Departure," who, while they decried the use of gold, furnished no substitute worthy to take its place. It cannot be gainsaid, however, that the influence of this school has helped to prepare the way for the popularity of the plastics which prevails to-day, a popularity which has the appearance of permanency and promise of growth. There is vastly more amalgam proportionately being used to-day than ever before, and oxyphosphate of zinc and gutta-percha are not unknown in any dental practice.

It is not hard to see that this state of practice exists, not alone because of the advocacy of any school of writers or prac-

titioners, but because of some advantage of its pursuit. An analysis of the conditions influencing it may be profitable: first, too much was attempted with cohesive gold, and consequent failure brought discouragement; second, the lack of harmony in color gave offense to the esthetic sense; third, the time and tax to patient and operator was no small factor in rendering the major operations unpopular.

The tendency of teachers and practitoners who do well with one material or method to become wedded to that material or method to the exclusion of any other, has been a marked feature of our past. It was not at all uncommon to find skillful, and in other things rational, men, going to extremes in argument against and denunciation of methods of practice which have been accepted finally as of inestimable value.

We were told by one practitioner of great experience and skill, that all bridge-work was an abomination, and he would not allow his patients to wear it under any circumstances; yet bridge-work has been unquestionably one of the greatest boons to the human race.

The demonstration by our Western scientists that non-cohesive gold would not stand the stress of mastication (machine performed mastication), must be looked upon as an effort to make it appear that this material was not suitable for filling occlusal surfaces; yet I have used it constantly in this situation for twenty-three years and frequently have seen fillings of this material fifty years old, showing no evidence of flow, and little of wear. In addition to this I have seen non-cohesive gold filling rolled into a pretty and homogenous piece of plate. Similar facts must have been known to the scientists, but they had no part in the deductions drawn from the demonstration.

Again, one practitioner denounced porcelain inlays as giving no promise of durability, and being less hygienic than gold; while another abandoned gold filling for inlay work entirely, and predicted that in the near future filling teeth with gold would be a lost art.

Such radical advocacy seems absurd, but we must regard

these advocates as specialists who brought to the development of their fads such an intensity of purpose and feeling, as lessened the perceptive faculties and blinded the judgment. Unconsciously these enthusiasts have had their methods woven into the practice of dentistry to-day, and while we have differed with them individually, we are heirs to their discoveries and experiences, and are richer for it.

When the late Dr. McKellops made a repeated offer of fifty dollars to any one who would produce an amalgam filling of his making, we did not stop filling teeth with amalgam, but more eagerly examined his instruments and methods of filling teeth with gold.

The past of dentistry has been made up then, of advocacy of special practice by men of one idea; an advocacy as untiring as it was often absurd. The names of Palmer, Varney, Webb, Bonwill, Flagg, Boedecker, Shumway, Clapp, Jenkins, Black, Wedelstadt, McKellops, Holland, Parran, Jackson, Angle, Case and hundreds of others, while remembered for many and divers services rendered their profession, will each be associated in our minds as a special representative of some one of the integral parts which go to make up our dental practice of today.

These men with zeal and skill have demonstrated their methods, and we have made them a part of ours; and in our humble opinion that is what should have been done by our medical surgeons when the celebrated Dr. Lorenz visited this country and demonstrated his method of treating club-foot and hip-joint malformations. No one expected our American surgeons to abandon other methods entirely for his, but who can say that the treatment of such conditions might not be modified and improved by his teaching and demonstrations. His influence will be felt and the combined effort of all the surgeons in the world to dissuade him from his special method would be futile. Such men seldom ride on the back seat, but in the seat of the driver, and even though the pace may be a little reckless at times, they are apt to make an arrival, and get their share of applause in the procession, too.

So it is in dentistry. Our specialists have been great in skill and resource, but all of their followers have *not*, and just here has been and always will be the possibility of harm growing out of their influence. After the promulgation of the electro-chemical theory of Palmer, weak-minded men abandoned their customary line of practice and did all sorts of absurd and unhelpful things instead. Many of the followers of Flagg refused to use gold at all, and in fact removed those fillings and substituted the crazy-quilt effect of many-colored cements and gutta-perchas. The Varney-Webb-Bonwill advocates gave us "plus contour" *ad nauseam* and were never happy when not producing the brass foundry effect in the human mouth. Boedecker and Shumway's followers burnished and rubbed gold and tin with an assiduity which reminds me of the wife of a Carolina Cracker. She rubbed snuff a little before breakfast to settle her stomach; between breakfast and dinner to help digest her food; between dinner and supper because she enjoyed it most then; after supper because the children were so annoying, and in the night because she had the toothache.

The followers of Black, Wedelstadt et al. have too often regarded extension for prevention to mean the extension of filling material for the prevention of tooth structure.

McKellops, Holland and others have had devotees who considered the rubber dam and the Perry separator essential to all dental operations.

Farrar's, Jackson's or Angle's method of orthodontia is pursued by many to the exclusion of each other or all others.

So the teaching of one idea or method has often robbed the too receptive, or too credulous of an eclectic practice, which would have been more productive of successful results. With the general excellence of practice existent everywhere, however, what boots it that special practice has found ardent admirers who have followed it to absurdity? Great emphasis has been given possibly to the advantages as well as the disadvantages, and the educational influence has been helpful in both directions.

May we not be like Paul, debtor both to the Greek and

to the Barbarian—learn a larger charity, get the good out of all special practice and show our appreciation by borrowing the enthusiasm and skill that go with each? Let us lend ourselves to the song:

SINGERS OF TO-DAY.

By William Ordway Partridge.

Oh! Singer of to-day, this glorious hour
  Is all for you and me—what shall it give
To us, and ask of fate—what splendid power
  In brain and hand, what glorious right to live
Among our fellows, and to war with sin?
  What quickening of the pulse as we aspire
To claim our right, and risk earth's joys to win,
  To conquer self, and force it through the fire!
Give us this force, dear God, and evermore
  Give us a deepening love of all our fellow-men;—
Give us new insight—courage to explore
  With all the tenderness of human ken
The lowliest heart that beats in human kind,
  Its glory and its soul to seek and find!

DISCUSSION.

Dr. Nyman:—Dr. Smith has called your attention to the fact that each generation experiences to a great extent nearly a repetition of the experience of the past. That is very true of the individual, and it is also true of that aggregation of individuals which we know as nations. Through all the ages of history nations have had their birth, they have had their period of development and advancement, and then they have had their period of retrogression and decay, and finally death. We of this generation have seen some nations pass from the highest pinnacle of earth's power to being second and third-rate nations. So it is true of the individual, and it will be true until time shall be no more. But it is not true of that divine gift of an all-seeing, kind Almighty, the gift of science to man. Science has never known a period of retrogression and decay; it has been one of advancement all the time, advancement analagous and contemporaneous with advancement of the reason. Because of this history of science we may feel encouraged for the future. The past, you know, if prophetic of the future, and we may in a sense read the history of the future in the past.

Now a great deal is being said these days of the necessity of primary training for those who are to take up the practice of dentistry. I believe philosophic minds have hit upon the keynote of our future success. If

we are to have a good structure we must have a good foundation. The dentist comes to us from other halls of learning with a trained, mature mind. He is a man who knows well the value of time, and will not waste it, a man who knows the value of the truths of all time, and who will store away in his mind the facts that are demonstrated to him. He does this, and when the time comes for practice, when something a little different from what he has usually found crops up, when an emergency arises—and emergencies are opportunities, you know—and he who makes the most of opportunities achieves success—he will always find a way to overcome the difficulty. So it is that this man who comes to his profession with a trained mind goes forth from his professional school to face the public with a good foundation for success.

And, my dear friends, the public is a very cold, merciless critic. It cares not how popular you were in the college; it cares not for the fact that you were a good football player, or that you were the leader of all the golfers in the collegiate association. You were supposed to be training for a certain specialty. Now they come to you and demand that you give them your skill and judgment in that specialty. They want to know that you are a broad-minded man, that you know your profession thoroughly, that you know what to do, when to do it, and why. Some of these men of mature minds have their influence, not only on the profession and the public, but on the public for our profession. He must be able to argue to obtain the needed laws for the protection of his profession and the public. He must be able to argue the legality of common sense. He must be able to argue with the minister of the gospel, the morals and ethics of the profession. He must be able to argue on all the broad public questions of the day if he is going to have any influence for his profession on the public at large. Men should go forth from the professional schools at a more mature age in order to have more influence for the public good, for their own good and for the good of the profession.

Furthermore, these men who have had good preliminary training are men that very seldom become that quasi-nuisance, the hobbiest. They are seldom swept off their feet by any hobby. They listen to the hobbyist and the specialist, they analyze the men and their methods, and then sift the kernel from the chaff. For this reason they make few mistakes.

Then, too, these hobbyists, as the writer has said, have their value to us, because you know we must have cranks if the machine is going to go on. Still if the machine has a crank without a balance wheel in the shape of a conservative mind, it will tear the machine all to pieces. And you may be sure of another thing, that he speaks for tolerance for the men with hobbies. If the man is sincere, you may be sure he has some foundation of fact for the position he occupies. The superstructure the hobbyist rears may be faulty in many respects, but down beneath it you will find a solid foundation of facts which you can take and on it rear a superstructure which will be different from the one he has reared.

The prophecy of the past is one of great encouragement to us, inasmuch as these days of enlightenment are so far ahead of the days of the

Dark Ages history tells us of, so the days of the future will be brighter to us.

Dr. M. A. Mason:—We have listened with a great deal of interest to the essay of our distinguished guest, Dr. Smith. I will say at the outset that he has presented some views which we heartily concur in and endorse, but we desire to give due notice that any tendency toward retrogression in professional attainments will be bitterly opposed by the profession at large. We demand, in justice to the matriculants to the various dental colleges that they be honestly dealt with, and that that proficiency in dental lore and manipulative skill which they seek and which they pay for and which they are entitled to should be furnished them as a reward for the outlay of money and time spent in the pursuit of dental knowledge and manipulative ability.

The advanced steps taken by the N. A. D. F. in pledging a better course of study for the students of the colleges of that Association have been taken by the profession at large with sincerity. Any act on the part of the Faculties' Association to depreciate the intent of the advance steps will be considered an act of retrogression.

The essayist has made use of the familiar expression, "History repeats itself." Does he mean to be instrumental in bringing about a verification of the old saying? Wherein does the term apply in connection with the subject chosen? Point out, gentlemen, anything in the rapid strides the dental profession has made from the day of its inception to the present time where there is the least indication of retrogression to the ancient requirements of the profession. The time will never come in the history of dentistry when there will be a return to the good old days when admission to the operating room was refused a brother dentist, and the laboratory door bore the universal sign, "No admittance." Those days have gone and gone forever. The age of seclusion has given way to the age of advancement.

The fact that there were those who took advantage of the action of the National Association of Dental Faculties relative to adopting a four years' course, and in their supreme delight cabled their joy to the International Dental Federation abroad, should not be considered a sufficient cause by the essayist to reconsider the action of the Faculties' Association on that subject.

Dental and Medical colleges spoil hundreds of good farmers yearly; but since all students absolutely refuse to recognize this fact, dental colleges and the profession must make the most of it. I am told that a watch-maker to learn his trade must spend three years of twelve months each as an apprentice before the trade is considered fully learned. Even then some candidates fail utterly to become fully qualified as watch-makers. How much more important that the graduate of a dental college, having the live tissue to operate on and about, and persons of an extremely sensitive nature as subjects be given an equal chance to become fully proficient for his life work. It is safe to say that 80 to 95% of the work done by dentists is largely mechanical in nature. If that is so, then why not devote more time to technical and practical work in both the laboratory and infirmary, with the absolutely sure results of increased skill

in manipulative ability? It has been said by one person in high standing in his profession that two years of the ordinary dental course could be profitably spent in making good mechanics of the students, and the extra year of the four years course should be spent in theoretical work. This would give fully 95% of the graduates of dental colleges almost absolute confidence in their ability to successfully perform the work of a dentist and have the skill to back it up.

Dr. Smith, in his essay, has suggested a larger number of clinicians and laboratory men as instructors in the colleges. This would afford the student close attention in his work, and would enable him to more satisfactorily perform his student duties. It would also dissipate the ideas of the students that it is unnecessary for them to pay close attention to their studies, and would help to convince them that commercialism is not the sole purpose of the existence of the college they are attending. The student is under obligation to faithfully perform the requirements of the college, and if he shirks this obligation the college owes it to both the student and the profession that he be compelled to do so. The colleges are morally under obligation to fit their graduates for practice anywhere, and to qualify them for the most rigid requirements of any State. This will not be attained until the instruction given in our various colleges has been reduced to an exast science with perfect results.

The essayist says that students, like mothers-in-law, are placed under a ban. Who is responsible for this? Surely not the student who is ambitious to fully qualify himself for the successful practice of dentistry, and in order to do so carefully selects the college that offers the best curriculum and clinical advantages. If the colleges of the Faculties' Association would honestly and faithfully carry out their agreements with each other, this ban would begin to disappear. The fact that the dental societies are so largely attended may to a large degree be considered as indicative of a recognition of the lack of preparation in our colleges. We are here to make up those deficiencies and the lack of preparation. It is not enough that the recruits to the profession of which we are members be equally skilful with those already in practice; they should be more so. Then we can continue to point as a profession with pride to the loftiness of our standard, its exacting requirements, its broad culture and its lofty code of ethics.

No, no! Let us not turn our faces backward from the high standards already outlined; but rather let us bend every energy to honestly realize them. Then the profession of dentistry will from its beneficence to the human race be more highly esteemed.

Dr. Geo. E. Hunt:—Mr. President, to compliment the essayist would be entirely superfluous. He is used to doing his best wherever be goes and whatever he does. Dr. Mason's very excellent talk puts me in mind of the old, trite saying:

> "When the devil was sick, the devil a saint would be;
> But when the devil got well, the devil a saint was he."

Now, if I am not mistaken, Brother Mason got his degree and license to practice after attending two sessions of nine months each. This mat-

ter of the number of sessions is one that interests me greatly, and one that should be given very careful thought. I think we have been carried off our feet somewhat in the last year or two.

There must be something in this thought transference game or the essayist could not have hit off my views so admirably. His remarks regarding the anxiety of representatives at the Faculties' Association meeting to climb on the progression band-wagon will be acknowledged to be true by all who have attended the sessions of that body. The wisdom of advancing the number of sessions to four, is extremely doubtful. As the essayist states, it has been largely at the request of the few "circus" schools that look to Europe as a fruitful field for recruiting. Some of these schools will have such a large foreign contingent soon that separate corps of instructors of different nationalities will be necessary to meet the demand. I am informed that in a prominent eastern school with over seven thousand dental students, one hundred and seventy-three of the two hundred and twenty-nine Germans in the freshman class were asphyxiated by the college yell, done into German, recoiling from the lingual surfaces of their lymphatic anterior teeth. In another of these large schools, it has been found necessary to introduce military methods to keep the students from trampling each other to death, and the terse commands of "*Tention!* Get ready to pour water: *Pour!* Get ready to sift plaster; *Sift!* Get ready to mix; *Mix!*" may be heard hourly But in the wild desire to show more students on the college roll, than some rival institution, the circus college still has its brass band in front of the tent and seeks students from Dan to Beersheba.

The extremists in preliminary requirements talk of a college degree—no less—for admission to the Freshman class. How many of you before me have literary degrees? I will give twenty dollar gold pieces to all who have if those who have not will reciprocate. Suppose a child begins his school life at six years of age, and few begin younger. At eighteen he will have completed high school, if sickness, accident and the mutations of providence have not interfered. At twenty-two he may have completed his college education. I say, may have, for statistics show that the average age of college graduates is higher than that. Four years more in medical college and three years in dental collage gives him an opportunity, at the callow age of twenty-nine, to begin to commence to prepare to start a practice. In the meantime, his younger brother, who quit high school at the age of eighteen and has been in the real estate business for ten years, has his home paid for and is going to take his wife and babies to the seashore this summer.

We have gone extension crazy on both preliminary requirement and length of course, in dentistry. While the leading educators of the country are advocating specialized and condensed courses that will enable the student to acquire most degrees in two and three years of college life, so that they may enter the lists of life at an age that will give them a fair chance with the non-collegiate man, we are seeking every opportunity to render the education of the future generations of dentists as difficult as possible, in the vain hope of decreasing the output!

I agree most heartily with the essayist that a premium should be put

upon certain preliminary work. The A. B. degree, and more certainly still, the B. S. degree, from the proper institution should stand for one year in the dental college. We who have had experience in college work have had frequent occasion to notice the ease with which holders of these degrees absorb the didactic courses in college work, compared with scholars with less literary preliminary preparation.

The paper is a timely one and meets with my full approval. I congratulate the Association and thank the essayist for presenting it.

Dr. Buckley (Chicago):- The essayist spoke of one very important point in the teaching of dental students, and that is that it is not so important to increase the length of time or the number of years in our course as it is to unify the course. We ought to have a unified, harmonious curriculum. I come from an institution where we have large classes, classes that are altogether too large. The essayist's suggestion of dividing these classes into sections and having more demonstrators is a good one. Then the point he made, and that Dr. Hunt has referred to, about giving credit for the A. B. degree, and especially as Dr. Hunt has said, the B. S. degree. It is gratifying to teachers who have had a chance to observe the readiness with which the students possessing those degrees absorb the didactic work in these schools. The fact that it requires two years high school work, or even if it demands high school graduation as a preliminary qualification for entrance into these schools, does not mean much. If you will look at the high school courses throughout the country you will find that they are just as inharmonious in their curriculum as are the dental schools. The amount of chemistry taught in one school, or the amount of physics, as compared with other schools is very different. One student may enter who is a graduate of a high school and knows scarcely anything of chemistry or physics, while another student entering under the same conditions from another high school may be thoroughly qualified in this respect.

We have no standard, we have no certain degree of entrance qualification, when we have high school graduation as a preliminary qualification.

Dr. Mason referred to the fact that he believed the large attendance at these State Dental Society meetings was indicative of the fact that members of this society had not a good preliminary education before they entered the profession, but that they came here to make up for that work. I believe he has that turned around; I believe he has the collar on the horse's tail. The men who are in attendance at the meetings of this society and the men who take an active interest in the work of the society are the men who have the preliminary preparation before they entered the school. They are not the men who need to make up any lack of preliminary education.

Dr. Mason:—I wish to correct a statement of the last speaker. I don't wish to be understood as saying that we are coming here because we lack preliminary education. That is not what I said. But we are deficient. The two years' course of nine months each that I had the privilege of taking I feel was not sufficient for me when I went into the practice of

dentistry. I have talked to a number of dentists here, and they are of the same belief. They do not believe the college course sufficiently qualified them to enter the practice of dentistry as they should have been qualified.

Dr. B. H. Smith:—I cannot help but recognize in the words of the gentleman who led the discussion, Dr. Mason, a ring of spirit which, in my opinion, masquerades under the title of advancement and progress. It is not important, gentlemen, that if you stand with me on a Southern Sea, and have reflected before you the rays of the sun, that you say to me, "The sun is reflected on that spot; I see it; it dazzles my eyes." It is rather more important that you accept the invitation of the gentleman who stands in his boat down by the edge of a little island, where the softness of the sun's rays playing upon the water produces such exquisite scintillations of color, such different hues of the water, but unfolds to the onlooker no dazzling light, but some softer, sweeter, prettier expression of nature.

So I say to this gentleman, if you travel with the hard and fast resolution that you want extension, that we must have extension, and will have it with arms and swords and bayonets, you may not expect the sympathy of the man who looks at this question from a broader and larger position.

As a teacher of experience I have sought nothing but what I believe absolutely to be for the best advantage of my profession, and have dealt fairly and squarely and honestly with the men who studied in my school. The dental student has rights, the mother-in-law—God bless her—gets some love. I didn't say the dental student was under the ban, nor did I say the mother-in-law was under the ban; I said they might be. I said we as educators were entitled to recommend to our students a course that would make of them broader and better and more skillful men.

Why not stop making dental students for a year, have a close season, if you have too many dental students? I am impatient with the eternal cry that the college is responsible always. You are responsible too, you men in the society, if we don't take our place in the general world. The opportunities for study are not abridged. You can make of yourself what you will. Colleges do not fail, in my judgment. I am familiar with the curriculum of nearly every college in this country, and many in Europe. There is better work done in the American dental colleges to-day than is done in any institutions in the world. It is done fairly. I hope no bitterness may attach to my emphasis. I believe what I believe, and if the day shall ever come when a man can prove to me that I am wrong, I shall lock arms with him and join him in his opinion; but I contend and stand for the principles enunciated in that paper, and which have been so ably and generously seconded by my friends, Dr. Nyman and Dr. Hunt.

SUGGESTIONS

CLEANING CEMENT SPATULAS.

J. M. Brimacombe, Chatham, Ont.

Very fine emery-cloth such as jewelers use is found effective for cleaning cement spatulas and other instruments where a polished surface is desired.—*Review.*

PREPARING CANAL POINTS.

A. W. Thornton, Chatham, Ont.

Pinch the large ends of the gutta-percha canal points with a pair of flat-nosed pliers. You can then handle them without difficulty with the operating pliers when you are inserting them into the canals.—*Review*

INVESTMENT MATERIAL.

A. G. Smith, Peoria, Ill.

An investment material for bridge-work, that will not check or break, even under rough treatment, may be made by taking long fiber asbestos (purchased from a dealer in plumber's supplies in the form of asbestos rope), picking it to pieces with the fingers, and placing the fiber in the water, to which the plaster of Paris is afterwards added. This investment dries out very quickly, will not change form and never requires to be wired or banded. It is inexpensive and one or two trials will enable any one to determine the proper proportions of water, asbestos fiber and plaster.—*Review.*

EASY METHOD OF REMOVING CROWNS OR BRIDGES WHILE FITTING.

L. S. La Pierre, South Bend, Ind.

Place a dry napkin or small square of bleached muslin over the crown or bridge and grasp firmly between the thumb and forefinger of right hand. A slight lateral movement will dislodge the appliance without marring it.—*Review.*

QUICK METHOD OF MAKING A COUNTER-DIE.

A. S. Waltz, Decatur, Ill.

Take the impression with a compound of two parts plaster and one part molder's sand. Dry the impression thoroughly and pour into the die metal as cool as possible. When the metal has crystallized remove the die from the impression. Soften some modeling compound and place it in the bottom of a vulcanite flask. Press the die into the modeling compound, cool in cold water and separate. You are now ready to swage the metal plate. By this method lead counter-dies are dispensed with, and as all the appliances are in the office it will cost nothing to try it.—*Review.*

A METHOD OF MAKING ALUMINUM LININGS FOR RUBBER PLATES.

B. L. Conway, Wilmington, O.

Take chloroform, three ounces; carbon disulphid, one ounce; powdered aluminum, one ounce. Before mixing the ingredients make a saturated solution of the chloroform and white vulcanite rubber. When the case is ready to pack, give the model a good coat of collodion, and follow this with about three or four coats of the aluminum preparation. I have used this for about six years, and have one plate under observation made in this way five years ago, and can see no change in it.—*Brief.*

PREVENTING MOSS-FIBER GOLD FROM ADHERING TO INSTRUMENTS.

H. Almon.

If you use smooth-faced pressure pluggers in inserting Moss-fiber gold you may be glad to learn that when the gold sticks to the instrument if you rub the face of the instrument heavily on a piece of pure block tin the gold plating thereon will disappear and the gold will not adhere for some time, after which the procedure must be repeated. Never mind about the tin. I have not forgotten and neither have you that many eminent men have advocated tin and gold in combination, little realizing in the beginning that they united.—*Review.*

KEEPING THE HYPODERMIC SYRINGE ASEPTIC

L. A. Meyer, Oconomowoc, Wis

Have two eight-ounce glass containers with covers. The cover of one of the glasses is perforated with a hole just large enough to allow the hypodermic syringe to pass through easily, to the finger guards. In this glass have a two per cent. solution of lysol, which makes a clear solution, filling the glass about half full, or, better still, just full enough to cover the syringe, with the needle adjusted to the point where the needle is attached to syringe.

The other glass with cover contains a twenty-five per cent. solution of glyco-thymolin. This solution is used by drawing up and forcing out of the syringe once or twice to clean the contents of the syringe, the wash being ejected into the cuspidor or waste bucket. This done, the syringe is placed in a glyco-thymolin solution and filled one-quarter full. Now place the syringe in this condition in the glass containing the lysol solution, there to rest until used again. When all is ready all that is needed is to force out the glyco-thymolin solution in the syringe and draw up into the syringe whatever fluid you wish to use, force out the air and inject. I have tried many methods, but find this most satisfactory.—*Brief.*

GOOD CAVITY LINING TO BE USED UNDER METALLIC FILLINGS IN SHALLOW CAVITIES.

Copal in equal parts of chloroform and alcohol. To this add an equal volume of hydronaphtol. If the cavity is very sensitive fill it with a paste made of zinc oxid and eugenol. Allow this to remain in the cavity several days. You will find in applying that it will harden under moisture, which makes it especially applicable in the class of cases referred to. —*Brief.*

PREPARATION OF CAVITIES FOR PORCELAIN INLAYS.

H. C. Raymond, Detroit.

It is not necessary to cut cavities too deep, nor on the contrary, must they be too shallow, or the cement will show through the filling. Never make a cavity perfectly round, and always avoid straight lines in cutting the margins. Slightly curved lines show the joints much less, and are more pleasing to the eye. There must be no bevel to the margins; they must be well-defined, perfectly even, smooth, and polished wherever possible. One of the main secrets of success in the work consists in having perfect margins.—*Dental Register.*

RENEWING MISFIT RUBBER PLATES.

When the bite and articulation in the old plate are correct, cut undercuts from the plate and fit it as close as possible to a new model, wax to form and flask. Boil out wax to separate. To soften old rubber, boil the half of the flask that has the teeth and old plate in glycerin; remove the old plate. Any rubber remaining can be removed in the same way. Replac the teeth in position, pack, vulcanize, and finish as usual.

This method saves time in many cases of making over plates. Where the articulation is wrong in the old plate, this method cannot be used No wax is needed on the palatine surface of most old plates to make the new one thick enough.—*Brief.*

INSTRUMENT STERILIZATION.

A. H. Merritt.

Instruments kept immersed in a twenty per cent. solution of formalin, with borax to excess, will not oxidize, and asepsis will be maintained.—*Dental Era.*

PORCELAIN INLAY CONTOUR WORK.

H. C. Raymond, Detroit.

In contour work, before stripping the platinum from the filling, it should be tried in the mouth, when it is too full it may be ground off and put in the furnace and reglazed. It is a good plan to try in the cavity before putting on the final layer, to see if it be too full or not full enough. There is one thing I must warn you against when trying in for this purpose: Don't try and match your color at the same time, for the platinum overlapping the tooth gives it a bluish cast, and makes it appear much darker than it really is.—*Dental Register.*

METHOD OF CLEANSING ROOT CANALS.

W. A. Johnston, Peoria, Ill.

When treating a tooth preparatory to filling the root I use a great quantity of water to cleanse the canals. One who has not tried it will be surprised to see how easily and quickly the work is done. With the rubber in position, I place my saliva ejector above the rubber dam instead of below it, and with a Moffatt syringe I wash the cavity of the tooth and the root canals thoroughly, using formaldehyde in the water, which is removed as fast as it collects in the depression of the rubber dam.

A small platinum point, such as is furnished with the Dunn syringe, attached to the end of the extra tip of the Moffatt syringe, enables one to get pretty well into some root canals and be sure that the water goes just where it is intended.—*Review.*

PUNCH A HOLE IN YOUR POLISHING CUP.

The rubber polishing cup has been in use many years and during that time has scattered powder over everybody and everything in its busy precinct. Someone in a recent item has suggested the punching of a hole in the side of the cup, using the dam punch or a hot excavator shank. It works to a charm. It was not much of an invention—the hole—nevertheless the gentleman who suggested it should have full credit. The thing needed the hole to make it perfect.—*Office and Laboratory.*

TO CUT SAND-PAPER.

To cut sand-paper into strip or other form, place the sheet on a zinc, tin, glass, marble or other hard surface and slash with one of the end angles of a file. Strips narrow or wide with sides parallel to each other may be cut with certainty and speed. While too coarse for other than occasional use at the chair, they are most convenient for use in the laboratory, whether folded under the thumb as in rubber and celluloid work, or wound on mandrils for use in the lathe.—*Office and Laboratory.*

HOW TO MAKE A HANDY BLOWPIPE.

C. J. Hadley, Chicago.

Obtain an old brass bicycle pump and remove the plunger. Unscrew the cap and insert the end of a small mouth blowpipe (about four inches long) in the hole in the cap as far as it will go. Mark it, cut off the small projecting end and solder to the cap. Now make a hole in the opposite end of the pump large enough to admit the remaining end of the pipe and attach with solder. Obtain some brass wire gauze, roll it with cotton and pack loosely in the pump chamber. Saturate the gauze with gasoline or alcohol and use with an alcohol or gas flame. You will find this a very convenient appliance for soldering at the chair and waxing up cases. Make one when you have time and you will not regret it.—*Review.*

ANTISEPTIC FILLINGS.

E. M. Roger.

An antiseptic, incorporated in oxyphosphate of zinc, gives a good foundation for a metal filling and has sufficient strength to protect the pulp from pressure. Hydronaphtol is a powerful antiseptic and at the same time non-toxic and non-irritant, and has no disagreeable odor. For convenience in using I keep hydronaphtol mixed with cement powder in different proportions, mixing by weight, ranging from 1 to 1 to 1 to 5 for cavities so deep that all the infected dentin cannot be removed, to 1 to 20 under gold, or 1 to 100 for setting an inlay.—*Brief.*

METHOD OF TREATING CHRONIC ABSCESS.

A. G. Smith, Peoria, Ill

A chronic alveolar abscess with fistulous opening may be cured in one treatment (provided a fairly good communication can be established through the pulp canal and out the fistula) as follows: Open up pulp chamber freely, remove all debris possible from root canal and irrigate thoroughly with your favorite antiseptic wash, being careful to force the liquid through the canal and fistula. Dry the canal as thoroughly as possible, wipe out with carbolic acid, creosote or oil of cloves, and pump chloro-percha through the canal until it appears at the fistula. Insert your gutta-percha canal point and also the permanent filling in the crown and you can dismiss the patient with the assurance that the fistula will heal from the bottom outwards and disappear entirely in a few days. I have never had this treatment fail.—*Review.*

ELECTRICITY IN THE DENTAL OFFICE.

A. M. Hewitt, Chicago.

HOW TO SPLICE A PLATINUM WIRE IN A FURNACE.

Take one end of wire in right hand and the other in the left. Cross them, wind the end from right hand around the wire in left hand, and then wind the end on left hand wire

around the wire in right hand. Trim the ends down closely. This forms a joint that will not arc or burn out or lap over on the adjoining wire.

Never wind a wire too tightly around a muffle after repairing it, as the uneven expansion of clay and wire may break the wire—although the wire should always be tight enough to keep it in place nicely.

MOISTURE IN FURNACE CLAY.

Tests made show that the ordinary clay muffle and cover are capable of absorbing anywhere from one to two and one-half ounces of water, and will readily absorb moisture from the air especially in damp weather. It is, therefore, always advisable when starting up a furnace to take a little time in drying out the muffle. Do so very thoroughly before gradually pushing the rheostat forward at intervals of 2 or 3 minutes each. It would be easier on the furnace if the intervals were 5 minutes apart.

The "fast man" who insists on pushing the rheostat up to the last button the first thing, deserves to have his furnace "burn out." And those of us who do not bake an inlay every two minutes during the entire day can well afford to spend a short time to bring up the heat gradually. Another point; it is just as hard on a furnace to cool a muffle quickly as it is to heat it too quickly. Therefore, after a case is baked, place the handle of the rheostat on the first button for a few minutes and allow the heat to gradually die away.

GOLD ANNEALERS

There are several electric gold annealers on the market. We believe that Dr. Custer's is the most scientifically constructed. The wooden edge around the outside is a distinct advantage, allowing the little finger to rest upon it while picking up gold. The rough surface is also desirable. The only criticism we have to offer is that is ought to be made a little easier of repair. Dr. Black says, "Time is an element in annealing gold." Personally, I never used any gold that was thoroughly annealed until I owned a Custer annealer.—*Extract Review.*

ROOT-FILLING MATERIAL.

B. L. Cochran, Burlington, Ia.

Gutta-percha base-plate, weight half ounce. Saturated solution of thymol in eucalypti, measure one-half ounce. Dissolve gutta-percha in chloroform, add thymol and eucalypti and mix thoroughly. Set aside to allow chloroform to evaporate. In manipulating the above, after the tooth is dry, place some of the filling in the pulp chamber and with a warm broach work it into the canals. It can then be forced to the apex with a soft piece of rubber, and the gutta-percha cone inserted in the usual way. If the canal is too small to admit a cone, a fiber of cotton may be used, or if too small for cotton, the filling can be forced into the warm canal with soft rubber, which is far better than no filling. I believe this to be much better than chloro-percha, for two reasons, viz: the presence of thymol and eucalypti, and no change in the material shape. After nearly five years' test in the mouth, I have found a distinct odor of the thymol and eucalypti.—*Review.*

INVESTMENT COMPOUND.

S. Moyer, Galt, Ont.

Plaster of Paris, two parts, and Portland cement, one part, makes the quickest setting and most reliable investment I have ever used.—*Review.*

SAFE METHOD OF FORCING ESCHAROTICS THROUGH FISTULOUS OPENING.

J. Mills, Brantford, Can.

Wrap cotton on a smooth broach, saturate with carbolic acid or other escharotic and insert in root canal. Fill the cavity with gutta-percha, puncture the filling and insert the nozzle of either a water or hypodermic syringe. The medicine can now be forced through by pressure on the syringe, leaving the cotton in the root. In some cases it is advisable to hold the finger on the opening of the fistula until considerable pressure is felt. This expands the whole fistulous tract, allowing the medicine to enter all folds.—*Review.*

PULP-CANAL TREATMENT.

C. E. Parkhurst, Somerville, Mass.

Peroxide is my regular canal cleanser. I like it because I can see it work, and it throws out of the canals the debris by its effervescence. Canal dressings are eucalyptol, beechwood, creosote, and formalin—eucalyptol, or eucalyptol and formalin, in anterior teeth; the same, or creosote, with or without formalin, in posterior teeth. And in stubborn cases forty per cent. alone has proved efficient. When a pulpless tooth is first opened and cleansed, it is stopped with cotton, then cotton and varnish, and finally gutta-percha, or temporary stopping.—*Extract International.*

TO PRODUCE A GLOSSY SURFACE ON WAX.

C. J. Hadley, Chicago, Ill.

After having made the wax base-plate as smooth as possible in the ordinary way, if a hard, glossy surface is desired, coat the surface with chloroform several times and with a small mouth blowpipe go over the wax carefully. The chloroform will cause the surface of the wax to melt at a lower temperature, leaving a smooth, hard surface.—*Review.*

METHOD OF RETAINING UPPER DENTURES.

A. C. Brewer, Baltimore, Md.

Finish the plate with a concave buccal surface instead of convex. This allows the muscles of the cheeks to hold the denture.—*Cosmos.*

CAUTION IN OBTAINING COLOR FOR INLAY.

H. C. Raymond, Detroit.

If the rubber dam is used in preparing cavities, the color of the teeth should be got before applying it, as when it has been on the teeth a few minutes, they dry out and become lighter in color, and will mislead when you come to match the color for the filling.—*Extract Register.*

EDITORIAL

DENTAL SOCIETIES AND MEMBERSHIP.

Some people are continually harping on the fact that comparatively few members of the dental profession become members of dental societies. It is true that a large per cent. of the dental profession are non-members, but is the fault all their own? Do those dentists who are members of societies and see the great benefits from these meetings, tell non-members of the good they derive from their association? Do they explain how every dentist can be benefited by attending society meetings? Do they take particular pains to ask their own local dentists to attend and join the society?

In the majority of cases it is perhaps indifference on the part of the individual that he does not attend. The young man building a practice perhaps feels too poor the first or second year after graduation to attend, and in not attending grows indifferent. But he does not realize what he has missed. He thinks he will obtain all the benefits from the published papers and discussions, but in this he is wrong. Much valuable knowledge is always gained from private conversation with brother dentists while all are congregated together—much can be learned from the exhibits at the various meetings, and many practical points picked up from the clinics.

Dentists make a mistake in allowing themselves to become indifferent regarding society meetings. No dentist is so expert or so filled with knowledge that he cannot learn more; especially in these days of rapid advancement and development.

Would members of the different dental societies take it

upon themselves to tell their fellow dentists of the many time-saving and advanced ideas they obtain at every meeting, and urge attendance on the part of indifferent practitioners, more would probably be made to see the advantages of attending dental societies, especially the meetings of those dental societies that are not encumbered with *routine business.*

To show what a little extra exertion on the part of a membership committee will do, we point to the records made at the recent meetings of the Indiana State Dental Society, and the Ohio State Dental Society. For Indiana the active work brought 67 new members into that Society, and for Ohio, the committee secured 76 new members.

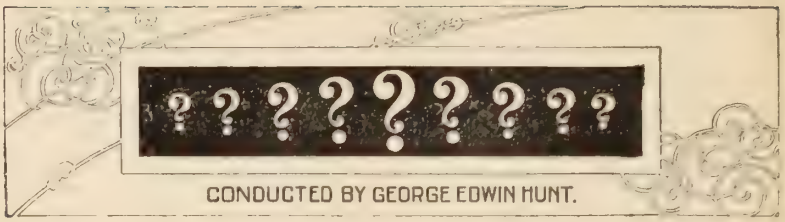
Here are some records for other States to contemplate.

If active work of a single committee can bring such remarkable results, what could the united effort of all society members do toward bringing new members into our State societies?

Few things will progress and prosper of their own accord. There must be activity back of every good movement to make it a success and maintain its standing and the dental society is no exception.

BE PATIENT.

We have on file a large number of excellent papers for publication but as they have to come in regular course we ask the indulgence of writers. We shall publish your paper just as soon as possible, and as good things keep well, it will not be lacking in interest from the unavoidable delay.



[This department will be devoted to the rational consideration of weighty problems propounded by the members of the profession. It is hoped that much valuable information will be imparted that cannot be found elsewhere. Correspondence is solicited from those seeking light in obscure places on abstruse questions. The inclosure of a stamp or two is suggested, if a reply is expected, not necessarily for publication, but merely as a guarantee of good faith. Questions for this department should be sent to Dr. G. E. Hunt, 131 E. Ohio street, Indianapolis, Ind.]

Old Subscriber asks:—What is a good coating for gold fillings so you can eat eggs and not discolor them?

Answer.—A good durable coating for gold fillings may be made from a half yard of yellow creton, gathered at the cervical margin and full over the point of contact. It should be trimmed with micro-organisms and cut bias. A little chenille around the button-holes helps like the dickens. However, a coating is probably unnecessary. Eggs are so high this winter that nobody can afford to eat them. Many of our best dressers are using eggs as jewelry and the expression, "Eggs as large as diamonds," is becoming a common figure of speech. Besides, what do you care if the gold fillings do discolor your eggs?

Anxious Inquirer asks:—I have a patient who has been owing me a bill for three years. He wants more work done. What material shall I fill his teeth with under those circumstances?

Answer.—Use sponge gold.

CURIOUS asks:—Can you tell the age of an old maid by looking at her teeth?

Answer.—Perhaps, but I trust I am too much of a gentleman to do so.

K. I. D. says:—Maryland University dental department has a new building corner of Green street and Cider Alley. What was the object of choosing such a location?

Answer—We understand the ultimate intention of the University is to put all the departments interested in the alleymentary tract in this building. It is believed the enteric specialists will find the location immensely favorable.

CONSCIENTIOUS asks:—Is it wrong to dam the teeth of a preacher?

Answer.—Not if it is done with subtilty. The best way is either in a low breath or in the laboratory.

PERPLEXED asks:—Should a person with a full upper and lower be charged extra in a sleeping car?

Answer.—In *Rogers vs. C. M. & St. P. R. R.*, 36 Wisconsin, page 723, we find the following: "The Court therefore decides that inasmuch as the plaintiff, having previously as such, done so, nevertheless, in spite of this, the railroad company, or perhaps it were better to say, the party of the first part, having lawfully and after due notice being given and received, notwithstanding which the defendant may of his own free will and accord, pronounce and decree, he deeming them worthy, but in the event, as it well may be and often is, the parties hereto bequeath, assign and everlastingly let go of their lights, rights and titles in the gazabo, as previously stated, then and in that event, the State being *in loco parenthesis*, all vested rights rest *in partes tres* until such time as one or the other of the parties hereto shall be hanged by the necktie, otherwise everything is as it was and the passenger either shall or shall not as the case may be and sometimes is." We believe this to be sufficiently explicit.

SOCIETY

IMPORTANT TO DENTISTS REGISTERED IN OHIO.

At a recent meeting of the Board of Dental Examiners of the State of Ohio, the Secretary was instructed to prepare and publish a list of the registered dentists of this State. This list, containing the name and location, will be mailed to each registered dentist.

This action is taken to ascertain the illegal practitioners and protect the legal ones.

This will require some time and work to arrange, and I respectfully request that any information you are called upon to furnish you will give it prompt attention; also, that all readers of this notice, registered in Ohio, send me at once the number and date of issue of certificate, present location, and name as it appears in certificate. This includes those registered but practicing in other States or countries, as we desire to make this as complete a list as can be obtained.

Address, H. C. Brown, D. D. S., *Secretary.*

185 East State St., Columbus, O.

NATIONAL DENTAL ASSOCIATION, SOUTHERN BRANCH.

The Southern Branch of the National Dental Association will be held in Washington, D. C., February 23, 24 and 25, 1904.

This will be a most interesting and profitable meeting and an excellent program is being arranged. Washington is an ideal place of meeting as well as a most interesting city.

Fernandina, Fla. Carroll H. Frink, *Cor. Sec'y.*

WISCONSIN STATE BOARD OF DENTAL EXAMINERS.

The next meeting of the Wisconsin State Board of Dental Examiners for examination of candidates desiring license to practice dentistry in Wisconsin will be held in Milwaukee, at Hotel Pfister, January 25, 1904.

Application must be made to the Secretary fifteen days before examination. Candidate must be a graduate of a reputable dental college, or have been engaged in the reputable practice of dentistry, consecutively for four years, or an apprentice to a dentist engaged in the reputable practice of dentistry for five years.

J. J. Wright, D. D. S., *Sec'y.*

1218 Wells Bldg., Milwaukee, Wis.

AFTERMATH

PERSONAL AND MISCELLANY.

McGill University is considering the addition of a dental department to the College.

Pioneer Dentist Dead. Dr. A. B. Dodge, Winneconne, Wis., is dead at the age of sixty-nine. Cause of death was diabetis.

Dr. H. S. Douthett Dead.—Dr. H. S. Douthett, Pittsburg, Pa., a young but promising dentist, died from the effects of typhoid fever December 8th.

More Thieves.—A dental office in San Barnardino, Cal., was entered by thieves December 7th and over $400 worth of gold and other accessories taken.

Dentist an Inventor.—Doctor Jamison, dentist, of Toledo, O., is the inventor of an automatic perfume-spraying apparatus that works by placing a penny in the slot.

Dentists Sued.—J. W. Lee, Philadelphia, has brought suit for $5,000 damages against the Institute of Expert Dentists for alleged negligence in extracting the wrong tooth.

Dental Office Burned.—The dental office of Dr. J. H. Proffitt, Winneward, I. T., was destroyed by fire November 10th. All the furniture and equipment were burned.

Serious Accident.- Dr. R. S. Connor, of Zanesville, O., was accidentally shot in the face and head while hunting November 13th, and it is said will lose the sight of his right eye.

Dentist Expelled from Dental Society. For alleged unprofessional and unethical conduct Dr. A. V. Cushman was expelled from Racine, Wis., Dental Society, November 16th.

Dentist Disappears.- Dr. B. L. Conway, Wilmington, O., has disappeared. Conway's wife, it is said, has sued for divorce, charging desertion, extreme cruelty and failure to provide.

Dental Office Burglarized. The dental office of Drs. E. R. Tait and C. F. Jarvis, San Francisco, were burglarized November 28th, and over $100 worth of gold and other materials stolen.

Chicago Dentist Fined in Germany.—Henry Ruppel, of Chicago, Ill., now practicing dentistry in Dantzig, was recently fined 3,000 marks for practicing dentistry without a proper diploma.

Dental Office Robbed.—The dental office of Doctor Cook, Salt Lake City, was robbed of a quantity of gold and instruments November 25th. The thieves, however, were caught and sent to jail.

Dentist Suicides.—Dr. W. T. Allison, Indianapolis, Ind., aged seventy-one, committed suicide December 7th, by tying a handkerchief saturated with chloroform over his face and turning on the gas.

Nine Out of Twenty Passed. At the recent examination conducted by the Ohio State Board of Dental Examiners there were nine out of the twenty applicants who received certificates to practice in Ohio.

Suit Against Dental Board.—Dr. Ellsworth Glenn, Columbus, Ohio, has brought mandamus proceedings against the Ohio State Board of Dental Examiners to compel them to issue him a license to practice in Ohio.

Good Suggestion.—A newspaper correspondent in closing an article on "The Care of the Teeth and Dentistry," says: "There is nothing which we should give more willingly than the money we pay to a skillful dentist."

Religious Mania Makes Dentist Insane.—Dr. J. J. Dusch, Chicago, has been committed to the insane asylum. He has been a persistent reader of religious works, and of late has imagined he was Christ. He is twenty-eight years old.

Elected Honorary Members. At the recent meeting of the Ohio State Dental Society, Dr. H. J. Goslee, Chicago; J. Q. Byram, Indianapolis; H. C. Raymond, Detroit; J. Y. Crawford, Nashville, Tenn., were unanimously elected to honorary membership.

Dr. A. F. Emminger Married.—Dr. A. F. Emminger, Columbus, O., was married November 9th to Miss Harriette Coleman, of Columbus. The ceremony was performed in New York City, in the presence of many relatives and friends. Congratulations.

Kentucky Board After Illegal Practitioners.—Five dentists of Kentucky have been indicted for practicing dentistry in that State contrary to law. The State Dental Association, according to the reports, is pushing the campaign against illegal practitioners.

Married.—Dr. N. Gutherie, Ottowa, Ill., was married November 25th to Miss Mabel Lardin, of the same city. Dr. B. J. West, East St. Louis, Ill., was married November 18th to Miss Burnah Buttell, of St. Louis, Mo. Dr. I. B. Wyatt, Huntsville, Ala., was married November 10th to Miss Katie Milligan.

A Musical Prodigy.—Miss Ruth Ryan, daughter of Dr. William Ryan, a dentist in New York, is denominated a "musical wonder." Although but eleven years old she knows the music of Beethoven, Mozart, Handle, Chopin and other great composers by heart, and shows a wonderful skill in technic.

A Dentist Inventor. -Doctor Bishop, Alameda, Cal., has given up the practice of dentistry and will devote his time to the manufacture of two inventions he has patented—one an axle for vehicles, and the other a device for changing from shafts to tongue in a moment's time. Doctor Bishop expects to reap a fortune from their sale.

Fire in Northwestern Dental College.—November 20th the Northwestern Dental School was visited by a disastrous fire that started in the dissecting room of the College. The total loss was about $30,000. All classes had to be dismissed for several days. Professor Noyes, and other teachers, lost valuable collections of slides and other teaching equipment.

Indian Territory Dental Association.—The dentists of Indian Territory have formed a Territorial Association. Officers for the ensuing year were elected as follows: J. E. Wright, president, South McAlester; W. C. Day, vice-president, Vinita; J. C. Abernathy, secretary, Ardmore; A. E. Bonnell, supervisor of clinics, Muskogee. The next meeting will be held at Muskogee, June 4.

Danville Dentists Organize. The dentists of Danville, Ill., met December 7th and organized a dental society, the first association of its kind ever organized in that city. The principal purpose of the Association is for protection. The society starts out with a membership of eleven, and the following officers were elected: President, J. D. Wilson; vice-president, E. T. Johnson; secretary and treasurer, H. L. Minnis.

Fraternal Dental Society. At the regular monthly meeting of the Fraternal Dental Society of St. Louis, Tuesday evening, December 8th, the following officers were elected for 1904: Dr. E. E. Haverstick, president; Dr. W. E. Brown, vice-president; Dr. E. P. Dameron, recording secretary; Dr. J. A. Todd, corresponding secretary: Dr. S. T. Bassett, treasurer. Drs. B. L. Thorpe, W. L. Whipple and G. H. Mathae, were appointed executive committee.

Southeastern Iowa Dentists Organize.—The dentists in sixteen counties in Southeastern Iowa have organized a dental society. The committee on organization will darft a constitution and by-laws, which is to be presented at the February meeting for acceptance. The committee is composed of Drs. T. L. James, of Fairfield, and J. N. Armstrong and W. S. Goldsmith, of this city. The program committee consists of Drs. J. B. Monfort and Frank Fourt, of Fairfield; J. T. Martin, of Muscatine; A. W. Dana, of Burlington, and W. W. Vance, of Ottumwa.

The Finest Dental Depot in the Land. The Ransom & Randolph Co., Toledo, Ohio, has outgrown its present quarters and is obliged to move into a larger building. About March 1st, when the new Manhattan building will be completed, this well-known firm will occupy the entire fifth and sixth floors, comprising 19,800 square feet of floor space. The latter floor will be the salesroom, and a special feature will be a tooth department with large windows facing the north and a special skylight above. It will be an ideal dental depot, probably unsurpassed in this country, if not in the whole world.

Ohio State Dental Society Officers.—At the recent meeting of this Society the following were elected: Dr. J. F. Stephan, Cleveland, president; Dr. W. T. McLean, Cincinnati, first vice-president; Dr. H. L. Ambler, Cleveland, second vice-president; Dr. S. D. Ruggles, Portsmouth, secretary; Dr. C. I. Keely, Hamilton, treasurer. Directors for three years: W. H. Todd, A. O. Ross, H. C. Brown, W. A. Barber. Executive Committee: H. C. Brown, G. H. Wilson, L. E. Custer, J. R. Callahan. Clinic committee: C. A. Hawley, Henry Barnes, W. I. Jones, E. S. Fuller. Arrangements: W. H. Todd, A. O. Ross, H. M. Semans.

Tribute to F. G. Wallace.—In paying tribute to Frederick Greenleaf Wallace, aged forty-four years, who died suddenly of pneumonia at his home in Cambridge, Mass., November 28, 1903, let it be said, that not only did he enjoy due respect and highest esteem among his immediate business associates but from his competitors as well, who all unite in expressions of sympathy for his demise. He will be sincerely mourned by many dentists throughout New England, whose confidence and regard he had gained by the upright and steadfast principles which have marked his career for more than twenty years in the dental supply business.

Dentists Cut Prices and Advertise to Get Rid of an Advertising Dentist.—A few months ago Dr. Boyd Gardener, a graduate, located in Dowagiac, Mich., and began a systematic campaign for patronage by newspaper advertising and by cutting prices. All this is contrary to the ethics of the profession, but Dr. Gardener would not listen to the remonstrances of the other dentists of the city. Now they have reduced the prices to 25 cents for extracting teeth by the painless method, 25 cents for silver fillings and $1.00 for gold fillings, with a view to running the newcomer out. They, too, are now advertising in the newspapers, although it is contrary to the rule of the State Association of Dentists.

A World of Gluttons.—A London doctor examined the teeth of several thousand people of the poorer classes applying at his hospital for treatment. Of all those thousands of sets of teeth he found only one set in anything like good condition—and they were almost perfect. Yet their owner lived upon the same kind of food and took the same care of his teeth—that is, no care at all. The explanation lay in

the fact that the man had a peculiar misformation of the jaws and throat which made it impossible for him to get food down except by chewing and swallowing a little at a time. And further, this man's general condition was far ahead of that of the others examined. No doubt, we do eat too much, and too often, and too recklessly. But, worse than quantity or quality is the almost universal failure to chew. Chewing the food comes nearer to being the sovereign cure-all for every kind of internal trouble than any other one remedy. It is tiresome, it impedes conversation. But perhaps it is better than appendicitis, and where it takes minutes from talking it adds years to life. Saturday Evening Post.

Dental and Medical Inspection in France. The matter of medical inspection of the schools is being agitated, and though there is some prejudice against it, France will probably follow the example of England, Germany and Belgium, where it is an established fact. This is intended not only for the lycees, where the more well-to-do people send their children, but for the public schools. It is claimed that many children have their growth seriously interfered with by the bad condition of their teeth; that many suffer from terrible headaches through defective eyes or that they get low marks on account of imperfect hearing. All these troubles could be remedied by a monthly examination of the pupils. The idea is to keep a record of health, just as a record of the pupil's progress is kept, and that this report be either kept in the hands of the teacher, or sent to the child's parents with other reports. The idea is an excellent one, and medical inspection of the schools will probably become a law in the near future.—Exchange.

Flour and the Teeth.—A valuable letter from a correspondent drew attention to an important and admitted cause of the national degeneration of physique which we have striven to emphasize in these columns, says the London Chronicle. The roller mill has indubitably diminished the dietetic value of our bread. The entire wheat grain is of value; the husk (which is a valuable intestinal stimulant), the brown exterior and the white central core. Except for certain invalids, white bread is an indefensible absurdity. Better, is brown bread, consisting of all but the husk, and the best is a whole meal bread, assuming such to be obtainable. The deficiency of salts in white bread is unquestionably related to the deterioration also familiar to our readers in the national teeth. We may illustrate this by an argument from Sir Thomas Lauder Brunton. "Why has America the cleverest dentists?" Answer: "Because she has the best flourmill makers." The better the mill is, the finer the flour, the poorer the bread, the worse the teeth, and the better the dentists. Perfectly simple.

Dental Student Dies from Effects of Hazing. Hazing is what might be called an educated murder. A coroner's jury has found that Martin Loew, a dental student in the University of Maryland,

Baltimore, came to his death as a result of hazing. When Loew went to the fraternity hall to take the first degree, he was met by twenty-five men. He was told to undress, and after doing so was blindfolded and taken into a room where he was laid upon a cake of ice. He was then carried up stairs to the balcony and thrown over the rail, a drop of twenty-five feet. On the floor beneath stood a number of students holding a sheet. When Loew fell into this, he was tossed up and down until he was unconscious. After being revived he was beaten until his body was a mass of bruises. That night he was in such a wretched condition that his room-mate stayed up all night with him. Whiskey and quinine were given him during the night and in the morning he felt relieved. The following Saturday he took the second degree. In the morning he was found dead, and his chum, who had just taken the first degree, was in a serious condition.—Exchange.

Recent Patents of Interest to Dentists.—

741,890—Dental dam, Henry Craigie, San Francisco, Cal.

742,011—Artificial denture, George J. Davidson, Richmond, Va.

741,687—Tooth regulating apparatus, James N. MacDowell, Chicago, Ill.

741,722—Tooth-brush, William B. Ryder and C. L. Reynolds, Redding, Cal.

742,374—Circuit controller for surgico-dental engines, William W. Alexander, Kansas City, Mo.

742,572—Artificial tooth, David N. Booth, New York, N. Y.

742,305—Blast-controlling device for dental or other uses, Nathan K. Garhart, Indianapolis, Ind.

742,446—Dental filling tool, Harry P. Lelly, Denver, Col.

742,698—Dental jaw-prop, Edgar L. Mason, deceased, Rockland, Maine; F. L. Mason, administrator.

743,817—Riveting device for dental bridge-work, Frank A. Brewer, Jr., and Frank A. Sr., Watsonville, Cal.

743,529—Chip-blower and syringe attachment for dental engines, Isidor Lyman, Cleveland, O.

743,582—Tooth-brush, William S. Stein, Lincoln, Neb.

Copies of above patents may be obtained for ten cents each by addressing John A. Saul, Solicitor of Patents, Fendall Building. Washington, D. C.

Another Meeting of the Kansas City Association of Licensed Dentists.—For the purpose of completing the organization of the Kansas City Association of Licensed Dentists, about thirty members of the profession met in the parlors of the Midland Hotel December 1st. The meeting was called to order by Doctor Ruby, secretary of the State Board of Dental Examiners. A permanent organization was effected by the election of the following officers: President, Dr. H. S. Vaughn; vice-president, Dr. Hubert Hutten; secretary, Dr. F. W. Franklin. The committee appointed at the previous meeting to make investigation and give the names of men practicing dentistry in Kan-

sas City without a license, submitted a report. They named ten persons whom they had found so engaged, and the report was turned over to the State Board for immediate action. As Doctor Vaughn, the new president, is a member of the State Board, the cases will be attended to at once and the prosecuting attorney asked to prepare the necessary papers, so they can be prosecuted under the State dental law. The matter of framing a code of ethics was taken up and considered, but it was finally decided to continue the code, for the present at least, to the requirements of the State law and let the matter of advertising and other minor subjects rest for the present. The Association adjourned until the first Monday in January, after a general discussion of dental subjects.

Dental Board Compels Applicants to Sign Code of Ethics.—The Washington State Dental Board, at its last meeting, requested the applicants for license to sign the code of ethics before examination. The agreement was as follows: "It is herewith agreed by —— and the Washington State Board of Dental Examiners that, in consideration of his being permitted to take said examination, he will, if a license is issued to him as a condition precedent, practice dentistry with full regard for the code of ethics which has been adopted by the National Dental Association, and will furthermore practice said profession in full accord and under all the rules and regulations or code of ethics that may be adopted by the Washington State Dental Association, and he herewith expressly agrees that for any violation of any of the provisions of the said code of ethics his license may be immediately revoked, and he will cease the practice of dentistry within the State of Washington, and to that end he herewith empowers the Washington State Board of Dental Examiners, or its proper representatives, to secure an injunction preventing his practicing dentistry in any of its branches within the State of Washington. He also herewith declares that he understands it to be the purpose of the Board, and also of the State Dental Association of Washington, to insure the safety of the public and to encourage treating with reputable dentists properly licensed, and who are willing to obey the law in all respects and to live up to a proper standard of ethics in the profession, and for that reason freely and voluntarily enters into this agreement so that he may aid in a recognition of the code of ethics and the proper practice of dentistry; and he further says that he has read a copy of the said code of ethics and knows the contents thereof, and knows what he has agreed herewith to obey, and agrees further with the Board that he will, if called upon, lend his aid in the enforcement of any penalty or steps that may be taken against those who are violating the laws of the State of Washington or the said code of ethics, either of the said State or National Dental Association. He acknowledges that working for or in an establishment, the management of which is not conducted in strict accordance with the code of ethics, is as guilty an offense as conducting such a practice in his own name and place. The foregoing agreement shall be as binding in

case of such employment as if personally the offender." Thirty-nine of the forty applicants signed the articles of agreement. Twenty-two passed successfully.

More Kind Words for The Dental Summary.—

"THE DENTAL SUMMARY *is very* valuable to me."—Doctor Dodel, San Francisco, Cala.

"I find THE DENTAL SUMMARY the best and most interesting dental journal published."—Dr. N. N. Wycoff, Trinidad, Col.

"We are taking THE DENTAL SUMMARY and consider it the best journal of the kind published."—Dr. Stonebrook Bros., Canal Dover, Ohio.

"I have received the file of THE DENTAL SUMMARY for the past year and I must say that I do not think that I have ever gotten more good out of the kind published."—Drs. Stonebrook Bros., Canal Dover, Ohio.

"A friend of mine handed me a copy of THE DENTAL SUMMARY. I took it home and have read it. It is *all right*. I will not put this off for to-morrow, but will send for it to-day. It is too good to let go by. Enclosed $1.00 for 1904."—Dr. H. D. Herthel, Milwaukee, Wis.

DENTAL COLLEGE TEACHERS' CONTRIBUTIONS

PROPHYLACTIC VALUE OF FORM OF PROXIMATE FILLINGS.

BY G. V. BLACK, M. D., D. D. S., SC. D., L. L. D., CHICAGO, ILLINOIS.

Professor of Operative Dentistry and Pathology, Northwestern University Dental School, Chicago, Ill.

The form given to proximate surface fillings is of the utmost importance in the prevention of recurrence of decay, and in the prevention of the occurrence of disease of the gums and peridental membranes. The points to be attained are: The preservation of the full mesio-distal breadth of the tooth crown; a correct form of proximal surface; a correct form of interproximal contact, and the health of the gum septum. The general rule will be that the original form of the teeth should be reproduced in the filling, but it often happens that the original form is not the best form, and in this case, when practicable, the form should be improved. The most essential features are that the contact point be well rounded, so that it will touch the proximating tooth only at a small rounded point, and that this be sufficiently prominent to restore the original tooth form, and therefore restore the full normal breadth of the interproximal space. When the forms of the teeth have been good, their restoration reinstates the normal conditions and cleanliness and health are readily maintained.

If, on the other hand, the mesio-distal breadth is not restored, the two teeth will soon be crowded together, narrowing the interproximal space and the crowding upon the gum septum will cause its partial absorption. It will be shortened

and will fail to fill the narrowed interproximal space, affording opportunity for lodgments in a position difficult to clean. The embrasures are also narrowed by reason of the teeth falling together, which prevents the excursions of food through them in mastication, increases the area of liability, or carries its borders further toward the angles of the teeth, so as to place the margins of the filling in greater danger of recurrence of decay.

When the proximal contact is not sufficiently prominent to restore the mesio-distal breadth of the tooth, it is necessarily flattened and broadened, and is in that degree less well adapted to maintain the cleanliness of the space. If it is flattened to any considerable degree, it will not only fail to be self-cleaning, but will grasp and hold stringy particles of food. These will be forced upon the gum septum, causing pain in mastication, which will be a grave annoyance, will cause the absorption of the gum septum, forming a pocket that will hold debris, which will decompose and cause recurrence of decay at the gingival margin of the filling, or cause disease of the peridental membrane, with final loss of the tooth, and will endanger the neighboring teeth.

In practice, cases are frequently presented of teeth that have been neglected. The contact points have been lost from caries, and the teeth have crowded together, closing up the normal interproximal space, until the necks of the teeth have come close together. Such spaces are usually a continual annoyance in chewing food, for the reason that they hold debris, which is crowded upon the gum septum at every effort in mastication. If these are filled ever so well, without restoring the original breadth of the interproximal space, by moving the teeth apart, the proximal contact will necessarily be flat and will continue to hold debris, which will be forced upon the gum, and the difficulty will not be improved. The remedy is in the restoration of a normal form by restoring the breadth of the interproximal space and mesio-distal breadth of the teeth with the normal form of the contact point.

Cases will be presented frequently in which numbers of

teeth have been filled without making this restoration, and the patient is in continual trouble, often to such a degree that mastication is seriously limited, or serious disease has resulted. In these cases the only remedy is in the retoration of the normal form as above indicated by separating the teeth and refilling.

Many cases are presented, in which the proximal contacts are very broad and flat, and the embrasures narrow and shallow. The teeth are thick at their necks and the proximal surfaces very flat. When cavities have occured in the proximal surfaces of such teeth, it is best, wherever possible, to slightly increase the mesio-distal breadth of the teeth as much as possible and make the proximal contacts more prominent than they originally were. This will increase the breadth of the interproximal space and the embrasures, contribute to cleanliness, give greater comfort in mastication and reduce the liability to recurrence of decay. In cases in which from loss of contact by reason of decay or by improper previous operations involving a considerable number of the teeth in the arch, considerable time should be allowed for the whole restoration. One or two of the spaces should be restored, and when possible, a month of rest should be given for the general adjustment to the new conditions in the arch. Then one or two more spaces should be widened, and so continue to the finish. In this way a very considerable difference can be made in the arch without special difficulty.

The contact points between the teeth become flattened by wear one upon the other, so that frequently, in middle-aged or elderly people, certain of them become so much flattened that they begin to hold stringy foods between them. This is forced upon the gum septum in every effort at mastication, causing pain, absorption of the gum septum and disease of the peridental membrane, and in many cases, decay of the teeth, beginning near the gingival line, occurs that is very difficult to treat. Whenever these are noticed their treatment should be undertaken. If they are presented early, before serious disease has resulted, it is often possible to separate

the teeth sufficiently and change the form by grinding, so as to prevent the lodgment. But the better way when the teeth are sound is to cut a proximal cavity in one of the teeth, and after securing sufficient separation, build a filling with a rounded contact point of sufficient prominence to open the embrasures sufficiently to prevent lodgments and restore the health of the parts. Many teeth are lost to persons immune to caries from the flattening of the contact points and disease of the peridental membranes, which follow as a result of the crowding of the food upon the gum septum.

Fillings that have been well made have their contacts worn flat by years of use, and stringy foods begin to be held and forced upon the gum septum. This causes pain and inconvenience and renders the parts liable to disease. In these cases the form of the contact should be restored. This may be done by removing the filling and making a new one. Or, if the filling is large, by cutting a slot in it and building a new contact point. Often this may be accomplished as well by the easier method of cutting a smaller slot in the filling and laying in that a piece of gold-platinum, or iridio-platinum wire just long enough to abut against the next tooth and form a contact point and secure this in position by packing gold over it. I have made considerable use of this later method in practice and have made use of it in my own mouth with the most gratifying results.

The time of the occurrence of proximal cavities, as we see them in practice, would seem to present no definite order or rule, except that they have their beginning almost entirely in youth. In persons but slightly susceptible most of the proximal surfaces do not decay, and many of them that do, linger, making slow progress hidden away between the teeth, and are not discovered until adult life. These are so easy of management when discovered before the pulp is too closely approached as to give no great concern. The number of proximal decays that begin in the enamel and stop before the dentin is reached, because of the coming of immunity to the locality, is very large. These show themselves later by a brown or black

spot in the enamel, just to the gingival of the contact point. The dark color often spreads away, thinning out, toward the buccal and lingual, marking out the area of liability to caries very perfectly. They are of no consequence, and when it has been determined that there has been no penetration of the enamel they should be let alone.

In highly susceptible persons proximal cavities are very destructive to the teeth and destroy them quickly. In this case they are more liable to attack the teeth in the order of their eruption, and are aften discovered within two to four years after the teeth have taken their places. In this case they are the most difficult of cavities to treat successfully. We have the child to deal with, the teeth become abnormally sensitive, and every movement in the treatment is painful, the self-control and endurance of the patient is low, and yet this is just the case in which the technical procedures need to be carried out with the greatest degree of minuteness to be successful. For a number of years the filling must resist the sharpest susceptibility to recurrence of decay. The operator may know well his duty and be skillful in manipulation, and yet, if he has not the moral courage back of his convictions, great patience and persistence, he will do well to transfer the little patient to some one better qualified in these particulars. Even with the most intense susceptibility some of the proximal surfaces usually escape decay, the local conditions as to form and cleanliness being especially favorable. Often the proximal surfaces of the front teeth will decay very early, and those of the back teeth not until later, or not at all. In other cases, the front teeth escape and the proximal surfaces of the bicuspids and molars decay very early. In either case the decays are very apt to occur in pairs, similarly located one upon either side of the mouth.

It not infrequently happens that the mesial surface of the first molars begin to decay while still in contact with the second deciduous molar and this will be the first proximal cavity. In children of good self-control and endurance these should be prepared and filled with gold when discovered. In the

reverse conditions in which the teeth are excessively sensitive and the child very difficult to control, it is better to use gutta-percha or zinc phosphate temporarily, await the shedding of the deciduous molar, and seize the opportunity when the whole proximal surface is exposed to view to make the permanent filling. The operator must not be tempted by these favorable conditions into making this a simple cavity without due extension for prevention or without cutting the full retention seat in the occlusal surface. He must form the proximal surface and contact point to meet with the second bicuspid, which will be quickly in position. A principal point in the treatment will be to determine what will be the area of liability when the bicuspid is in position and include it in the area of the filling. Failure in either of these directions will be fatal to the future of the filling.

FRACTURE OF THE MAXILLA RESULTING FROM TOOTH EXTRACTIONS.

BY STEWART LEROY M'CURDY, M. D., PITTSBURG, PA.

Professor of Orthopedic and Clinical Surgery, Western Pennsylvania Medical College; Professor of Anatomy, Oral and General Surgery, Pittsburg Dental College; Orthopedic Surgeon of Presbyterian Hospital; Surgeon of P. C. C. & St. L. Ry.; Member A. M. A., A. O. A., Pennsylvania and Ohio State Societies.

During extraction of teeth it is quite common for small portions of bone to come away with the tooth and no ill result is anticipated. If, however, any considerable portion of bone is attached to the tooth or detached from the process by the tooth or forceps, careful examination of the parts should be made by the operator, so as to guard against complications.

It is an occasional complication for the mandible to be broken through and a more frequent thing for the outer or inner half of the process to be split away down to the apices of one or more teeth. In the maxilla, especially in the intermaxillary process where the bone is not so stable, the entire pro-

cess is occasionally torn away. This is more liable in mouths that have had suppurative conditions about the teeth, for in such cases ankylosis of the tooth to the bone usually follows if the pathological change has extended down in the socket for any distance.

AN EXPERIENCE IN ATTEMPTED EXTRACTIONS.

The writer had an experience some years ago in trying to extract teeth from the mouths of sisters, both under twenty-five years of age. In the first case, an effort was made to remove the tooth for ordinary toothache. It was impossible. A dentist tried and he failed. Some months later another toothache developed and an effort to remove this tooth was a failure. A sister had a toothache, and an effort was made to extract one of her teeth, which was just as futile. I am sure that if the tooth had been removed in any of these efforts considerable of bone must have come away. Others have found similar conditions.

UNDESIRABLE EXPERIENCES.

During the writer's early experience, a right upper third molar was extracted for toothache. The first and second had been extracted. With considerable of force and twisting, the tooth came out, but along with it came the entire process, including the floor and posterior wall of the antrum back to the pterygoid process. Since in the small town where I practiced, there was no one with whom to consult, the case was left alone. It is evident that the periosteum and antral mucous membrane was not injured, or the cavity entered, for the patient made a prompt recovery.

Recently a dentist came to my office and showed me a molar to which was attached the process, including the floor of the antrum.

He was very much worried and wanted to know what he should do. He was advised to be sure that the lacerated gum and soft tissues were adjusted across the cavity left by the removed bone. This was done and repair followed and the patient never knew that so much bone had been removed.

Such results should not be expected in every case, for it is the exception rather than the rule for the floor of the antrum to be broken and infection not to follow.

A CASE FROM PRACTICE.

The following case typically illustrates the usual course when this accident occurs:

Miss F., aged about twenty-three, had a first bicuspid tooth extracted for the usual toothache without apparent complication at the time of the extraction. In two weeks she returned to the dentist with an unusual discharge from the tooth socket and face-ache. A simple antiseptic mouth-wash was prescribed, but a thorough examination was not made. At the end of a month, she again returned to the dentist, at which time symptoms had increased in severity. A probe was freely passed up into the antrum. The usual mouth-washes were used daily for two weeks, but without abatement of the symptoms. Three months after the extraction, the dentist and the patient called upon the writer, who took charge of the case. For another two months the case was given the usual treatment. The case improved and relapsed, but no permanent benefit could be claimed. As the orifice into the antrum was through the first bicuspid, it could be reasonably inferred that the opening into the cavity was anterior to the most dependent portion. An operation was made, which consisted in passing a quarter-inch dental bur two inch shank backward from the existing orifice into the antrum, and while the bur was in the cavity, to rake it back and forth to destroy a partition which was found to exist. The operation was done under chloroform. From this date on, the case improved and all pain, face-ache and pus disappeared. The cavity was flushed daily with a fifty per cent. solution of borolyptol as hot as could be tolerated by the patient. This was followed by an injection of ten per cent. solution of iodoformized glycerine, and the orifice packed with sterile gauze. The antrum was not rammed full of gauze as is so frequently the practice. Active symptoms subsided and in the course of a few weeks the patient was discharged, and

during the three years since that time, the cavity has remained well. As but one tooth was removed, and that one the cause of the trouble, a plate with one tooth was adjusted and this effectually closes the permanent orifice, the only evidence of her former trouble.

THE THERAPEUTIC VALUE OF A PARTIAL PLATE —A CASE IN PRACTICE.

BY P. B. WRIGHT, D. D. S., MILWAUKEE, WIS.

Professor of Prosthetic Dentistry. Dental Department, College of Physicians and Surgeons, Milwaukee.

The case presented in this article is perhaps similar to many which have appeared in the practice of many of the readers of this journal, but the conditions surrounding the case and the beneficial results obtained may interest a few of the younger dentists and encourage the taking up of difficult cases.

The patient, a lady of about thirty-eight years, had been treated by the writer at intervals of from four to six months for a period of about two years. Deposits of tartar were removed, fillings inserted where necessary, and the teeth cared for as well as possible.

A few years previous, the patient had suffered the loss of the left inferior bicuspids and molars, the extraction being done by a backswood dentist as the most certain preventive of decay.

The remaining teeth were in fairly good condition and were all present, with the exception of the right inferior second bicuspid.

The patient did not complain of any great discomfort occasioned by the loss of the teeth and was not desirous of wearing an artificial substitute.

But as time went on the elongation of the molars and bicuspids in the left superior maxilla became quite pronounced, as there were no opposing teeth to check it. Recession of the

gums naturally resulted and the exposed portions of the roots became sensitive, tartar in hard granules forming rapidly and was often difficult to remove. As a result of the impaired function of mastication, indigestion and malnutrition were apparent, adding to the patient's discomfort.

It was imperative that something be done to relieve the conditions present and to save the affected teeth from total loss.

The case seemed a very unfavorable one for the insertion of a denture, and the means of retention were confined to the accurate adaptation to the soft tissues, as the use of clasps and other retaining devices was contraindicated.

An accurate impression of the inferior maxilla was secured in plaster, die and counter were made of Babbit-Haskell metal, and a gold plate made and strongly reinforced.

The plate was carefully adapted to the mouth and an impression secured with the plate in position. The bite and an impression of the opposing teeth were secured and vulcanite teeth arranged to supply the missing organs. An anatomical articulator was used in order to get as perfect an articulation and occlusion as possible. The teeth were attached to the plate with vulcanite and carefully finished and polished.

One point necessary to observe in all partial dentures is to set the teeth a trifle higher or longer than the natural teeth to allow for the settling of the plate into the soft tissues.

For the first few weeks, as was expected, the patient had difficulty in managing the denture, particularly in attempting to masticate food, but by encouraging the use of it and by the exercise of considerable patience by the wearer, complete mastery was obtained, and the last time the patient was seen she declared she would not know how to do without the plate.

The beneficial results can be briefly enumerated:

Elongation of the teeth was arrested.

Exposed portions of the roots of the teeth have lost their sensitiveness.

The gums have become firm around the teeth and recession has ceased.

The function of mastication has been restored and the general health of the patient is greatly improved.

In the early part of the treatment the daily use of magnesium hydrate was prescribed to correct the acid condition of the saliva and lessen the sensitiveness of the teeth.

Where it is possible and is considered advisable to use clasps or other aids for retention of the plate, it will of course greatly assist the patient in the management of the denture.

REGULAR CONTRIBUTIONS

A SYSTEM OF PORCELAIN INLAY.*

BY ARTHUR E. PECK, M. D., D. D. S., MINNEAPOLIS, MINN.

(Continued from page 19, January Dental Summary.)

LABIO-LINGUAL-INCISAL.

Cavities of the fifth class, involving labio-lingual-incisal, are illustrated on Plate VI, Figure M. While the cavity, at first glance, seems to show a V-shape, it will be noticed that for a short distance back from the incisal edge the walls are perpendicular to the incisal surface. This is essential, as it gives a solid piece of porcelain without the fragile edge. A slight groove down the sides and across the base of the cavity will give it sufficient retention and yet allow an impression to be drawn from it. Figure N is a cross-section gingivo-incisal, showing retention groove. Figure O shows the inlay with its retention ridge.

INCISAL EDGE.

Under the sixth class we have a cavity involving the whole incisal edge. Plate VII, Figures P and Q, illustrate the preparation, which is made mostly by means of a stone, slightly grooving the center of the cavity, mesio-distally, and bringing the margins at the labial and lingual surfaces to a sharp edge. On either side of the pulp a slight depression is made with a round bur to mark the place for the pins to be inserted. This will be transferred to the matrix, giving a correct guide for

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PLATE VI. A.

placing the pins. Figure R shows the inlay with the pins in position. The pins should be about 21 standard gauge.

APPROXIMAL AND OCCLUSAL.

Cavities of the seventh class, involving the approximal and occlusal surfaces of the posterior teeth, must be cut well out to buccal and lingual surfaces; unless this is done it is almost impossible, especially with the occlusal surface, to get perpendicular walls of porcelain, so essential to strength. Plate VIII, Figure S, is a view looking down into the cavity. Figure T, same plate, is a cross-section showing the location of pins. Figure U shows the inlay with one of the retention pins.

Figure V shows the inlay with a correct angle of porcelain on the right and an imperfect shape (acute angle) on the left, that is almost certain to be made unless the cavity is cut well out to the margins.

To be successful in this class of cavities, where so great a pressure is brought to bear, a solid body of porcelain is absolutely necessary. Pins are preferable to grooves for retention. With a round bur make a slight depression at the point in the cavity where the pins are to be placed. This will be transferred to the impression and in turn to the matrix. After the matrix is invested in the investing material (which hardens in a short time) the matrix can be perforated at the point indicated by the depression and the pin inserted into the investment, allowing the point to project a sufficient distance to support the inlay. The investment material will hold the pin in position while fusing.

POSTERIOR OCCLUSAL.

Cavities of the eighth class, involving the occlusal surfaces of the posterior teeth, open a field worthy all the time and expense required to become proficient in this class of work. To be able to restore with porcelain the contour, color and service of teeth that have been worn off so much as to require the bite to be opened is certainly a great step in dentistry, and the restoration in cases of this class with unsightly gold fillings may now be a practice of the past.

PLATE VII.

Plate IX, Figure W, gives a view of this preparation, showing the grooves and depressions marking the site of the pins. Figure X gives a view of the inlay with its retention ridges and pins in position.

(See special instruction for matrix formation and placing the pins under the heading "Matrix Formation.")

Any of the porcelain bodies on the market, either high or low-fusing, may be used with this system.

TAKING IMPRESSIONS.

It is not necessary to put the rubber dam on to take an impression. Place a folded strip of cottonoid under the lip; dry the cavity and dust well with soapstone; then allow the patient to bite on another piece of cottonoid; mix the cement to a consistency which will allow it to be handled with the fingers. Into the cement incorporate a sufficient amount of soapstone until the adhesiveness is destroyed. Plate X, Figure Y, represents the cavity of which the impression is to be taken. The matrix strip being placed between the teeth, the cement is then crowded into the cavity from the side of the tooth into which the filling is to be inserted (Plate X, Figure Z) and, as soon as it is in place, the matrix strip is bent onto the cement from both sides, holding it in position until it is nearly hard. Remove the matrix strip and chisel off carefully the surplus cement; then remove the impression.

To get an impresion of the occlusal surface, encircle the tooth in question with a piece of the matrix strip, crowd the cement down on top of the tooth. When hard, remove the strip and take out the impression.

MATRIX FORMATION.

Matrix formation is the next step in the process of porcelain inlay. While it is of the highest importance, it is difficult to lay stress on any one point as being more essential than another. Each link in the chain of this work must be perfect, differing from other operations in the fact that a failure in any part of the operation is fatal.

PLATE VIII.

It is impossible, in a majority of cavities prepared by this system, to obtain perfect adaptation to all parts of the cavity, except by swaging, it being essential that the whole surface be perfectly covered, as the retention of the inlay depends on this feature.

The adaptation of the inlay to the cavity depends on the formation of the matrix, and control of expansion and contraction.

There are two methods of fitting the inlay to the cavity. The operator may choose between these two, but he must follow one or the other to its completion. The old method of fitting the matrix directly into the cavity leaves the finished inlay smaller than the cavity the thickness of the matrix, which space is sufficient to allow for a slight contraction or expansion. Good results can be obtained by experts with this method, but, not being a positive system, it depends for success largely upon the personal equation.

By the system which this treatise exemplifies, contraction and expansion are perfectly controlled, thereby allowing an inlay to be made which exactly fits all parts of the cavity. To obtain this result, a correct impression of the cavity must be taken. The convex surface of the impression represents the exact inside of the cavity; the concave surface of the matrix swaged to fit this also represents the exact inside of the cavity. A filling baked to this concave surface after removing the matrix, must be a duplicate of the impression, and if contraction and expansion are controlled, must fit the cavity perfectly.

If the instructions in cavity preparation are followed closely one will have no undercuts; and with a good impression the making of a correct matrix is positive.

The impression (Plate X, Figure AA), taken by the process previously explained, is backed with cement in the reinforcing ring (Plate X, Figure AB), as the strength of the impression unsupported would not be sufficient to withstand the strain to which it is necessary to subject it.

When hard, remove with a bur or chisel the portion of the impression and reinforcement that would interfere with

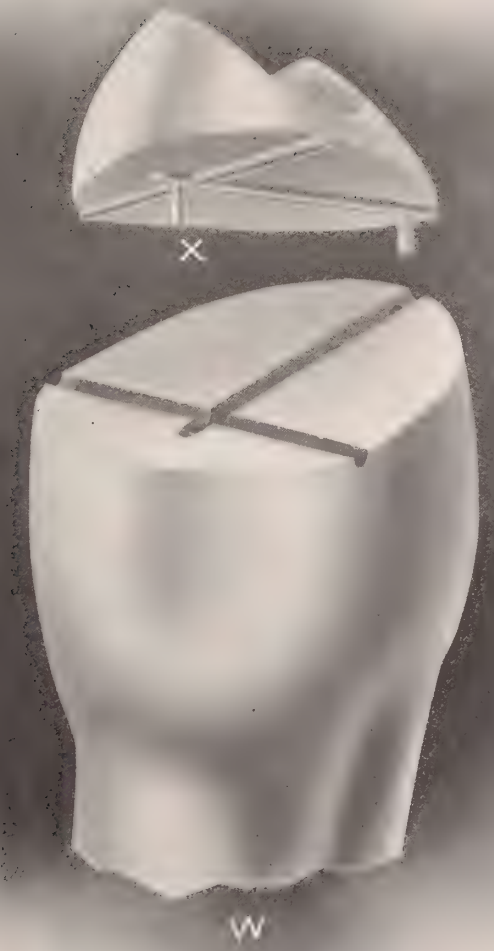


PLATE IX.

the swaging of a matrix or the drawing of a counter-die; *this latter feature is very important as a perfect matrix may be spread sufficiently to spoil it in the removal from the impression.*

Invest the reinforced impression in the die-cup, using modeling compound for the investing material; trim off the surplus and take a piece of platinum 1-1000 inch in thickness, large enough to cover the impression, and form this to the impression. Fold the platinum on itself whenever it is necessary. The folding prevents tearing, and can be burnished out when it is worked down on the die. It is then annealed and returned to the die ring. Place the die-cup (Plate X, Figure AC) in the die-cup receptacle.

Now place a small ball of mouldine on the matrix and with the plunger drive it home hard. Mouldine gives the best results, but other materials may be used, including rubber, soap, cement, etc. Remove the plunger, wipe off the mouldine, and with the small end, force the die-cup out of the receptacle, then burnish the margins of the inlay. Then remove the matrix and make incisions about one-eight of an inch apart extending around the border of the matrix; anneal and strike with the swage again. Now, with a chisel placed on the matrix just back of the margin, turn up the matrix in as many places as possible, using a sharp knife to place under the edges of the platinum in turning it back on to the chisel, producing the results as shown in Plate X, Figure AD. These edges and corners will engage the investment, which is poured on the matrix at this stage, having first oiled the parts surrounding the matrix to prevent the investment sticking. This investment, incorporating the edges of the matrix, will prevent contraction and expansion, thus insuring a perfect fitting inlay, providing the previous instructions are closely followed. The matrix being reinforced on the die with the investment material, precludes any possibility of changing its form while removing. Figure AE shows the invested matrix in the die-cup. Figure AF shows the invested matrix ready to receive the porcelain for baking.

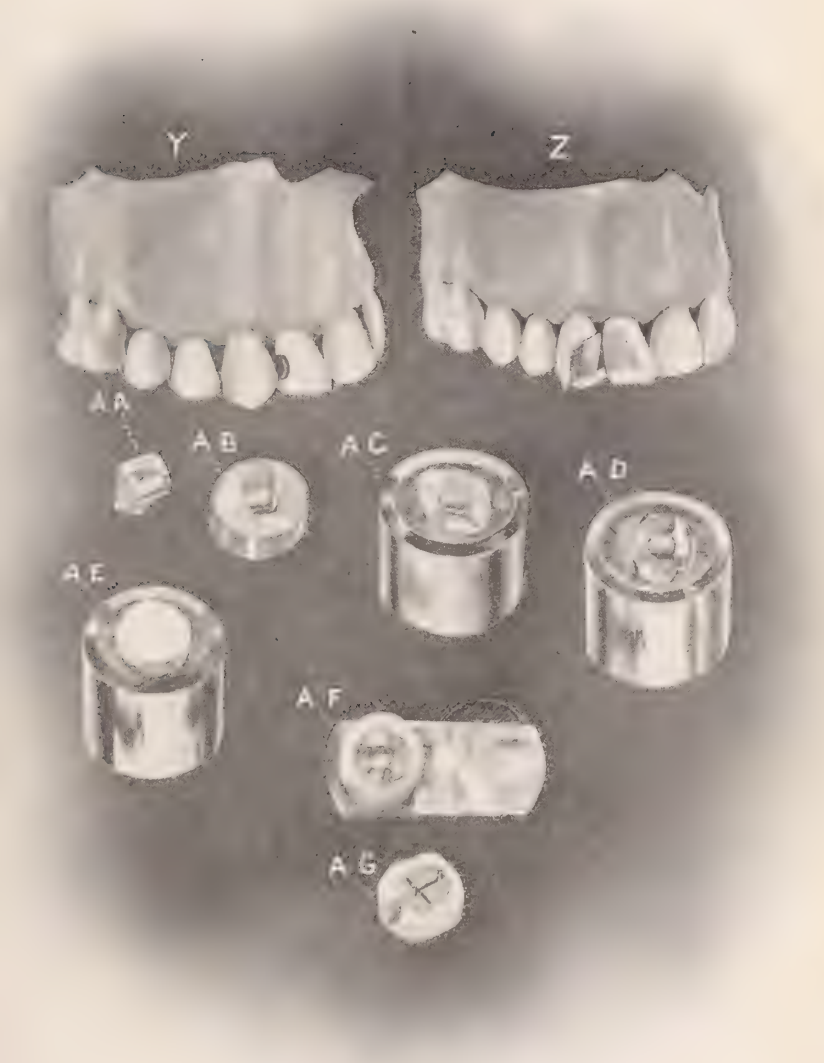


PLATE X.

Figure AG, Plate X, illustrates the invested matrix of the eighth class of cavities, showing the pins in position to be fused in the inlay. The perforation through the matrix must not be made with a bur. An instrument a little larger than the pin should be sharpened to a three-sided spear point and carefully worked through the matrix into the investment, and the pins inserted therein.

The investment material must be of such a nature that the extreme heat will not change its form; if it expands or contracts at all, it will draw the matrix with it. This investment becomes sufficiently hard to admit of perforation without danger of changing its form, allowing pins to be placed through the matrix into the investment which holds them in position while they are fused in the inlay.

(To be continued.)

THE MATRIX AND PAD.*

BY F. W. STEPHAN, CHICAGO, ILL.

The matrix used is an ordinary simple matrix made of any soft sheet metal. The pad is made of gold-foil, tin-foil or tin and gold folded to any desired thickness. (The clinician prefers tin and gold.)

The pad is cut a little larger than the matrix. It is laid on the face of the matrix, the slight surplus being turned over the edge to be carried to the gingival margin. In this form matrix and pad are carried to place and wedged firmly. The pad is then cut along the buccal and lingual margins, and that portion extending into the cavity is laid over against the cervical wall and condensed to form the first layer of the filling.

ADVANTAGES.

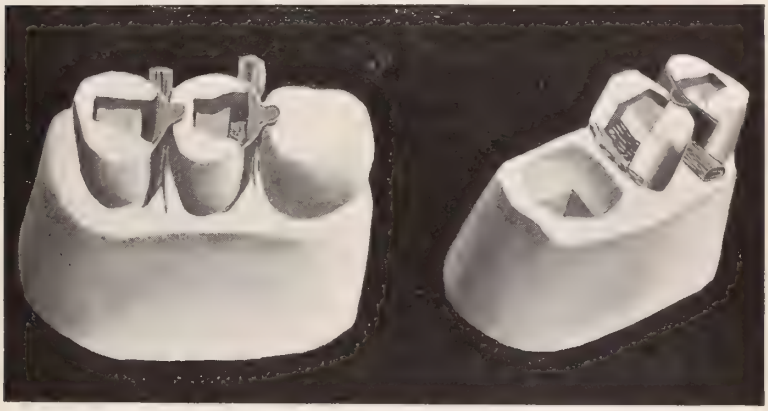
The pad adds to the matrix three advantages:

First—It does away with any liability of injuring the margin of the cavity.

*Presented at Indiana State Dental Society.

Second—It holds the matrix away from the margin enough to overcome the sharp angle which would otherwise exist between matrix and tooth and which is so difficult to fill.

Third—By laying the accessible portion of the pad into the cavity to form the first layer of the filling, the cervical margin is easily and very certainly covered.



In the model: First bicuspid shows the matrix and pad in place; second bicuspid shows the pad cut along lingual and buccal margins and inside portions condensed against the cervical wall.

Fig. 2 shows matrix with pad ready to carry to place between the teeth; also two views of wedge.

AN IMPROVED METHOD OF MOUNTING PORCELAIN CROWNS.

BY C. F. RODGERS, CONNEAUT, O.

The only fault that can be found with the Davis crown is the liability of the tooth to pull off the pin, dependence being placed entirely upon the cement for retention.

By this system it is absolutely impossible for this to happen. As the Davis crown comes to us the hole for the pin is slightly dovetailed. With a diamond drill make two holes, one on each side at the bottom of the hole as shown in Fig. 1.

FIG. 1.

FIG. 2.

FIG. 3.

Use a platinum pin, which will just fit the hole at the entrance, split it for a short distance. (See Fig. 2.) Prepare the root and crown by any of the well-known systems. Just before mounting fill the hole with cement and force the pin in with a few taps of a light hammer, this will cause the split end of the pin to spread by being forced against the little hump at the bottom of the hole, as shown in Fig. 3. Mount as usual. A harder pin than platinum can be used, but great care must be used to prevent cracking the crown.

After the cement has set for a few minutes it is absolutely impossible to get it off without breaking the crown.

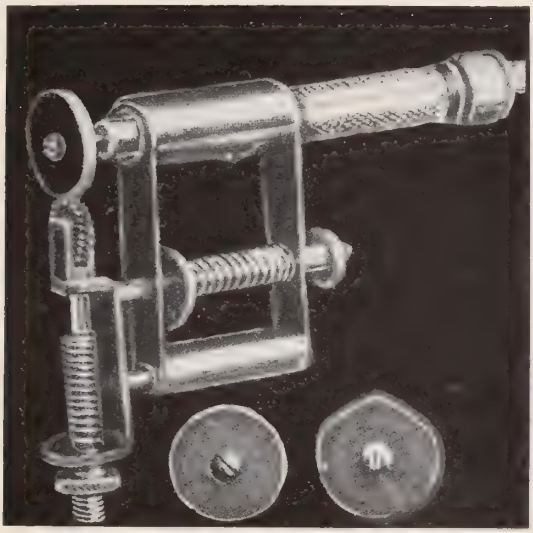
AN APPLIANCE FOR TRUING UP ENGINE WHEELS.*

BY ALEX. JAMESON, D. D. S., INDIANAPOLIS, IND.

Once in one of my "unlucid" moments I bought an appliance. It was not labeled and I never knew who made it. I found out subsequently why it was not labeled and why the maker's name

*Presented at Indiana State Dental Society, 1903.

was not upon it—it was no good. I had a machinist make me a brass rod with threads, etc., in all respects like the rod which carries the spur wheels, except that it was solid at the top instead of being fixed to carry spur-wheels. Into the end of this rod I drilled a hole large enough to put a diamond chip into, that cost



me sixty cents. I put the diamond in loosely and laid the rod sideways on an anvil. I took a punch and hammer and by hitting the brass rod one blow so compressed the brass that it held the diamond in position securely. The cut explains the rest.

THE ARTICULATION OF FULL ARTIFICIAL DENTURES.*

BY F. R. HENSHAW, D. D. S. MIDDLETOWN, IND.

In selecting a subject so old and threadbare and upon which much has been written that is better and clearer than anything I may write, it is not with the hope of presenting anything new, original and startling, but with a single object in view, which, if it succeed in arousing even a passing interest, will have accomplished all that is intended.

*Read before the Indiana State Dental Society, July, 1903.

That I cannot be accused of plagiarism is certain, for as a plagiarist is one who adopts the words and ideas of another as his own and I have already denied any attempt at originality, the inference is obvious.

How many of us have ever seen a perfect artificial full denture? By perfect I mean one that not only restores the physical appearance intended by nature, but that allows all the movements natural to the jaw in mastication, fits firmly and correctly in place and is capable of withstanding the stress placed upon it in mastication. I very much doubt if many of us have had that pleasure. I was once told by an old friend, a dentist of reputation in Indiana, that in all of his more than forty years experience, he had seen but one case that he could call absolutely perfect, "and," he modestly added, "I made that one myself."

I believe he did, for if any one could do so, he was the man. However, although absolute perfection may not be often achieved, yet there should certainly be a near approach to it that is within the power of every man whose heart is in his work and who is desirous of adding art and science to the mechanical skill that is the basis for his success.

That the profession of dentistry has not more men like Bonwill and Kingsley is much to be regretted, and I believe it to be a fact beyond dispute that the best minds and talents of the profession to-day are not being bent to the perfection of this branch of our work; indeed, I know a number of men who are easily ranked among the best in Indiana whose plate-work is done after the models have been prepared by mechanical laboratory men, who, although they may be expert workmen, never having seen the patient for whom the work is being done, cannot certainly give the work the appearance and perfection of detail which it demands.

The excuse usually given for this is that they have not the time to devote to plate-work, which very naturally brings to light the fact that the making of plates has been so prostituted by the advertising quacks and others that it has become mean in the eyes of the world, and even our best patients who would make not the slightest objection to any fee for a piece of operative work, will writhe and groan and even suspect us of being hold-up men at the mere mention of a fee for a plate that would enable the dentist to *afford* to take the time necessary to make of it, what it should be, a perfect restoration.

It cannot be wondered at, therefore, that many of our best men do not give their best time and ability to plate-work, for it is literally true that they cannot afford it under the existing conditions.

Bonwill, in his study of the human face and jaws, has demonstrated from a mathematical point of view the relation between the jaws in all natural positions and his articulator is based upon these conclusions. The average width of the lower jaw between the angles formed by the body of the jaw and the ascending ramus, has been placed at four inches, and it has been discovered that a line between these two points forms the base for an equilateral triangle whose apex rests at the median line, and while there may be many variations from this rule, yet it is accurate enough that all anatomical articulators, so far as I know them, are based upon it.

I take it for granted that every one nowadays uses some form of anatomical articulator, for it is certainly a very necessary device in obtaining the correct relation of the jaws in all positions. I do not care to go into detail in the matter of the selection of the teeth for any given case, as that is a science within itself, nor into the making or preparing of the models, as that will have nothing to do with the object of this paper, nor into the taking of the bite, except to say that I believe the only accurate way to obtain a bite is by means of base-plates. After the bite has been obtained and the models attached thereto, they should be arranged in the articulator so that the median line of the upper model rests at the apex of the triangle before alluded to.

This point can be determined by means of a pair of calipers, or better still, by placing a piece of cardboard of the proper size and shape, over the top bow of the articulator. The bite being corrected by actual trial of the base-plates in the mouth—and this may necessitate the removal of one or both models from the articulator—we come to the real work of plate making, the grinding and adjustment of the teeth.

In the endeavor to illustrate this I have prepared two models, one of the natural jaws and teeth of a young man of twenty-five years showing the attrition of the natural teeth due to some twenty years grinding after the manner of his kind, and the other a full artificial denture showing the attrition produced by about six hours of hard work with a carborundum. To those who

"may curiously trace nature through her various windings to her most concealed recesses" these models may give evidence of an attempt on my part to reproduce by grinding these porcelain teeth, something approximating a condition existing in the worn surfaces of the natural teeth. Such at least was my design.

Before taking up the subject of grinding, let us deal first with the relation of the natural teeth in the various positions which the jaw may assume. In moving the lower jaw laterally to either side it will be observed that the second molars of one side remain in contact while the bicuspids and cuspids of the other side are in contact, and when the lower jaw is bodily protruded the second molars on each side are in contact at the same time as the incisors. To obtain this same relation an artificial denture is necessary, because without it tipping off the plates in some positions will be sure to follow. If there were need for none but a crushing force between the jaws in mastication the opposing teeth could, as well as not, be made perfectly flat on their occluding surfaces, but the grinding motion given by the lateral and forward movement of the mandible, affected as it is by the very peculiar articulation of that bone, demands the presence of cusps and sulci, whose depth and length depend upon the amount of over bite given to the anterior teeth and whose relations in opposition are governed by definite rules.

GRINDING OF THE TEETH.

The greatest difficulty comes in grinding the porcelain teeth to accommodate them to these conditions. There is not now, nor, so far as I am able to learn, has there ever been, any make of teeth on the market that is applicable to a correct artificial denture without much grinding by the operator that would be avoidable if they were made to correspond with models approved by the best minds of the profession. In the attempt to similate nature in the making of bicuspids and molars, the manufacturers, to a man, have only produced abortions that it takes the best time and skill of the dentist to make over into usable forms. In grinding these teeth for practical use the first to demand attention are the incisors and cuspids, superior and inferior. It is readily evident that the beautifully rounded incisal edges of these teeth as they come from the manufacturer cannot, by any possibility, come in such contact as to render them useful in biting, so to remedy this defect the six anterior superior teeth should be ground from the labio-incisal

edge, lingually at an angle of perhaps forty-five degrees and in a gently concave form, as shown in Fig. 1. To do this it is necessary to materially shorten the cuspids. Teeth having a medium length bite are to be preferred in the majority of cases, although there are some that demand longer or shorter bites. The lower incisors and cuspids are ground in an exact reverse of the superior, that is, from the linguo-incisal angle labially, at an angle corresponding to that of the superior, but with the new surface slightly convexed so that when in contact they will accurately infringe upon the upper (Fig. 2).

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

When mounted the ground ends of the teeth should be in such relation as is indicated in Fig. 3.

The most difficult and particular part of the work comes in the grinding of the bicuspids and molars, as no attention is paid to the existing grooves and cusps, but entirely new articulating surfaces being formed.

The superior bicuspids should have their buccal cusps flattened and shortened to correspond in length with the lingual. They should then be ground with a square edge carborundum to form a sulcus extending mesio-distally through the tooth at about the middle of the buccal cusp and sloping gently to the lingual border of the lingual cusp, the angles being gently rounded. (Fig 4).

The superior molars are ground in the same way, the sulcus extending the full width of the tooth, mesio-distally. The depth of the sulci in these teeth will be determined by the length of the overbite allowed in the six anterior teeth. In grinding the inferior bicuspids and molars, the buccal surface of the buccal cusps is ground to make these cusps sharp and to allow of their coming in close contact with the lingual surface of the buccal cusps of the superior teeth. The sulci are cut in the lingual cusps in the same

manner as in the superior, thus making an exact opposite of the upper teeth as shown in Fig. 5.

The teeth when ground in this manner and set up in place with any reasonable degree of care and skill cannot fail to afford better surfaces for mastication, and if the ordinary rules regarding the relation of the length of overbite to length of cusps and the compensating curve backward from the cuspids be observed, there need be no trouble with tipping and rocking as, in no necessary position of the jaws will the posterior portion of the plate fail to be in contact.

It is very evident that to grind a full set of twenty-eight teeth to anything even approximating the forms I have here shown, will take not only time but labor of the very hardest sort. Say that the average case would require three hours for the grinding alone—and I think six hours would be a better average—it is plain to be seen that few of us can afford to spare the time to do it for the fees that we are able to get, and consequently are forced to make the best of circumstances by using the teeth as they come on the card, with only such grinding as may be absolutely necessary to get them together.

A PLEA FOR BETTER SHAPED TEETH.

Now the object I have had in view in writing this paper, is simply this: that the great prosperous, noble and near-sighted profession of dentistry, that it may longer be compelled to waste its energy and time, or fail of its purpose in one of the most important operations in its domain, rise in the might of its influence and numbers, and demand that molds of teeth be prepared and offered by the manufacturers, that will come near enough to the forms approved by the master minds of the profession, that by a minimum amount of grinding at the hands of the individual dentist perfection in articulation may be obtained.

I have no doubt that a concerted move in this direction by the various dental societies of the country would meet with a ready and hearty acquiescence from every manufacturer in existence.

If this paper shall have aroused enough interest in any one person that he will join in making such a demand, then I shall have accomplished my purpose.

A METHOD OF FILLING PULP CANALS.*

BY D. L. STINE, D. D. S., INDIANAPOLIS, IND.

Nearly four years ago my attention was called to a material and method for filling pulp canals, which has proven so satisfactory and successful that I deem it worthy of description here. It was not new when it came to me, having been in use some eight or ten years previous to that time by a Texas dentist whose name I cannot recall, and by some others for a shorter period.

The formula for the material I have changed somewhat from the original and reduced to the following:

Zinc acid (by bulk).....3 parts.
Tannic acid.....1 part.
Merk's creosote.....sufficient to make thick paste.

In making up the formula, a good plan is to mix thoroughly the zinc oxid and tannin in a mortar. Put this into a small wide-mouthed bottle and add sufficient creosote to moisten well. It will be observed that after standing a few days the zinc oxid will settle to the bottom in a hard mass, in which form it is most conveniently used.

The zinc oxide best adapted to this purpose is the ordinary powder used in cements. One which is ground rather coarse is preferable. The commercial article is usually powdered too fine to be easily packed into the canal, and is also liable to contain deleterious impurities.

It is also important that the refined creosote, such as Merk's, be used. At one time I had considerable trouble from using a mixture made of the drug store zinc oxid and the ordinary commercial creosote. When any of the liquid was forced through the apical foramen in filling, it would cause slight pericementitis and sometimes considerable pain for a few hours. In one case it was so severe as to necessitate the removal of the filling. Five or six of these cases coming in immediate succession led me to believe the cause of the trouble lay in the quality of the materials used. I never have determined whether it was the creosote or the zinc oxid, but I do know that after making a new mixture with the proper ingredients, there has not been the slightest annoyance of this nature and there was none previous to using that one mixture.

*Read before the Indiana State Dental Society, July, 1903.

PREPARING AND FILLING THE CANAL.

In preparing the canal for this filling the same methods and the same care should be used as in cases where the apical foramen is to be hermetically sealed with a gutta-percha cone, which seems to be the popular method at the present time.

The canal is cleansed, enlarged, rendered aseptic, and as dry as possible. The walls are moistened with the pure creosote, either by means of shreds of cotton on a broach or by dropping from the pliers. This should be carefully worked up to the apical end of the canal with a broach. A suitable quantity of the filling material is then placed in the pulp cavity over the canal opening and mixed with the creosote already within the canal, until it becomes quite soft and plastic. The point of the pliers will serve for this purpose. The mass is then gently pumped into the canal by means of a broach; or sometimes in upper teeth it is better to use small shreds of cotton wrapped around the broach. When the canal has been thoroughly filled with this semi-fluid paste the excess creosote is removed by applying a small pellet of cotton or bibulous paper with very slight pressure. The pumping process is then continued to allow the escape of more creosote and condense the filling. The cotton should not be pressed too hard at the beginning or the solid constituents will be packed at the mouth of the canal, preventing the escape of the liquid and leaving the apical portion filled with a soft mass. After all excess creosote is removed and the filling forced in as solid as possible with cotton, it is well to pack still harder by using a flat-faced root canal plugger. In this way the zinc oxid can be condensed into a solid plug and forced into every irregularity of the canal, filling it perfectly. When completed the filling is of about the same density as gutta-percha stopping.

It has been suggested that a gutta-percha point be used with this material, but I believe a better filling is made without it, on the principle that "if a little is good, more is better," and a further advantage is that in the event it should be necessary, its removal can be quickly and easily accomplished by moistening with a drop of creosote.

FILLING THE CROWN.

The roots being filled, all excess material should be carefully removed from the walls of the cavity, well up into the canal

and the pulp chamber filled with cement, upon which to build the crown filling. Often in molars, however, amalgam can be placed immediately upon the root filling without the base of cement; but wherever gold is to be used it is always necessary. This is especially essential in anterior teeth where the least discoloration would be objectionable. In such cases only the root canal proper should be filled with the mixture.

In roots where the apical foramina are closed or very small, and especially in lower teeth, the filling of canals in this way is a very simple and easy matter. It is not a difficult task in any case as compared with other methods, but where the foramen is large and open, more time and pains are required lest the soft mass be forced through. This is true, however, of any method, except perhaps that of using a gutta-percha or other plug which accurately fills the canal, and in that case there is much greater danger of forcing a bubble of air into the tissues. Even though a small amount of this material should be forced through, no trouble will result provided the pure ingredients are used.

WHERE APPLICABLE.

This method is applicable to all kinds of roots, but is particularly advantageous in abscessed teeth and in those canals which are so small and crooked that free access is almost impossible to obtain. I have never known of a recurrence of an abscess in roots once filled with this material.

Of course the fact that it has been invariably successful for three or four years is no proof that it will be so permanently. These teeth might cause trouble in the future. But at any rate it is a satisfaction to keep some of them quiet and useful for even a few years; should troublesome symptoms arise a repetition of the dose is an easy matter.

THE RATIONALE OF THE GOLD INLAY.*

BY H. B. TILESTON, M. D., D. D. S., LOUISVILLE, KY.

To the thoughtful practitioner of dentistry or of medicine the mere statement that a certain procedure or method of treatment is successful as a remedy for diseased conditions is not sufficient. To his inquiring mind it is necessary to present the

*Read before the Indiana State Dental Society, July, 1903.

reasons why such procedure or method is effective; he must be able to see and recognize the scientific principle upon which it is based, and if the explanation is not self-evident, he demands that it must be shown by argument and demonstration.

I venture to make the statement to this assemblage, that in very many cases where the molars and bicuspids are extensively destroyed by the ravages of the disease known as "dental caries," the gold inlay offers the very best method by far for the restoration of such teeth and their future preservation; and in making this broad statement I realize that I am addressing thoughtful men with critical minds who demand to know the reasons upon which such a claim is based.

While the rationale of the gold inlay, or the reason for its use, is probably quite self-evident and needs no argument to establish the claim that it is one among many acceptable methods of restoring and preserving carious teeth, yet when the claim is made that in many instances it is by far the best method, then it becomes imperative to substantiate such a statement by reasons convincing and undeniable.

The memory of man fails to recall or history to record a time when human teeth were not subject more or less, to the destructive action of caries. For centuries, perhaps for thousands of years this disease has been observed and studied, and there never has been, and there is now but the one treatment for the established disease—that known as the "stopping process." We know more about prophylaxis in these latter days than ever before and practice it more intelligently, but for the effects of dental caries we have but this one single remedy and upon it we expend our best ingenuity and skill.

The rationale of the stopping process is based upon the fact that caries is external in its origin and not internal, and that nature has provided no means by which lost tooth tissue may be restored; hence it is necessary to replace that which has been destroyed by a foreign substance totally unlike the natural tooth tissue but fortunately, kindly tolerated in contact with the remaining vital portion of the organ.

There is no postulate in pathology more definite than that caries of the teeth is caused by the action of an organized ferment which either attaches itself in the form of plaques to the smooth surfaces of the teeth in localities sheltered from frictional cleansing, or finds ready entrance to the dentin through openings

in the enamel due to structural defects. The only successful treatment known, the so-called "stopping process" is, therefore, an exceedingly rational one since it consists of the thorough removal of the affected portion of the tooth and the filling of the cavity in such manner, and with such material as will exclude this organized ferment from possible contact with the dentin of the tooth.

Hence the first essential to success in this operation is perfect adaptation of the filling material to the cavity walls.

To find a substance possessing such natural properties and capable of such manipulation as will fulfill all the requirements of a filling material has occupied the best thought and experimentation of dentists for ages, with the result that we have a limited number, each of which has some of the desirable properties, but no single one possessing them all.

Pure gold, either foil or in the crystalline form, is accepted almost universally as the material offering the greatest number of advantages as a filling material in the largest number of cases, but how seldom is it that even the most skillful operator succeeds in accomplishing perfect adaptation to all parts of cavity walls and margins with gold, particularly in large cavities on the proximal surfaces of molars and bicuspids requiring much contour.

Amalgam being a plastic material is more readily adapted to cavity walls, but owing to changes which occur in the process of hardening, and afterwards perfect permanent adaptation is quite impossible.

Tin is more easily adapted than gold, but it is not indestructible chemically, and is not hard enough to stand attrition on exposed surfaces. The same objections may be urged to gutta percha.

The oxyphosphate of zinc cement, as far as adaptation to cavity walls is concerned, is by far the best of any filling materials used by the dentist, and if it were indestructible in the oral fluids and impervious to them it would be the ideal and the dental profession would need to look no farther for perfection.

We have then two materials, pure gold and oxyphosphate of zinc cement, neither of which is perfect in itself, but which comprise together all the qualities desirable in a filling material if they could be so combined as to utilize the valuable properties of each and eliminate the objectionable ones.

The gold inlay offers an admirable solution of the problem.

Constructed by the method and process which I have advocated, the adaptation of the inlay itself is all but perfect and when set in place in the cavity with cement is absolutely so, while the cement itself is entirely protected from the action of the saliva and its solvents by the gold. This combination, it seems to me, leaves nothing to be desired as far as permanent adaptation and consequent perfect protection of cavity walls is concerned.

Because an inlay must be inserted entire when completed, it requires a cavity to be prepared in a manner not always possible in many cases, or at least not advisable and hence many cavities are preferably filled with gold foil or crystal gold, but I think I may venture this statement—"that no cavity is ever so well filled with gold, but that it would be better if it could be lifted out bodily and reset with thin cement." If this statement is true, and I sincerely believe it is undeniable, then the value of the gold inlay as a preserver of tooth tissue par-excellence, is established. Furthermore, the gold inlay, as made by the method I advocate, offers this advantage over either a gold filling reset with cement or a porcelain inlay, that in the latter cases there is a slight line of cement exposed, while in the former a thin overlap of gold is provided which thoroughly protects the cement from possible disintegration.

Owing to the necessity of preparing cavities for inlays in such manner as to admit of an impression being taken, whether an impression is used or not, their application is limited to large restorations in molars and bicuspids, but such cases are by no means rare. In fact there is scarcely a denture which comes under the observation of the dentist wherein he may not find cavities in which inlays are indicated if his eyes are open for such cases.

Moreover, the very necessity for special preparation of cavities for inlays compels the operator to cut away buccal and lingual walls, and he thus practices extention for prevention to the unquestioned advantage of the tooth operated on.

I may add briefly a few additional advantages offered by the gold inlay as follows:

Easy restoration of contour to *any* extent.

The actual strengthening and bracing of frail teeth in which, because of their frailty, a gold filling could not be thought of.

Saving of time to the patient and use of time by the dentist which is less valuable to him than those hours he would have to employ in making a gold filling.

Lessening of tax upon strength and endurance of both patient and operator.

Avoids the use of large amalgam fillings in many cases where amalgam would be objectionable.

May be frequently employed instead of crowning with gold, over which it has many advantages.

And finally, a better fee can be and should be demanded for a gold inlay than for any of the other operations which might be resorted to in the same case.

I have referred several times in the foregoing argument to a special form of inlay, and while not properly to be included under the caption of this paper, a brief description of the inlay with the modus operandi of construction may not prove unacceptable in this connection and will help to make clear the demonstration which will be given at the clinics.

The cavity is so prepared that an impression will draw, filling in such undercuts as cannot be obliterated, with cement, and a bite and impression taken at the same time with modeling compound, chilled while in place. The tooth containing the cavity is filled in the impression with copper amalgam and the balance of the impression with plaster, mounting the case on a crown articulator. We now have the tooth to be operated on made in metal and its approximating and occluding teeth in plaster. An impression is not essential in all cases if patient and operator have the time needful to adjust the parts of the inlay in the mouth. In mesial cavities easily accessible, the adjustment may be made in the mouth, but in cases remote and inaccessible, especially in a small mouth, an impression and model greatly simplifies the operation. I have restored the disto-buccal corner of an upper third molar by means of an impression and model with ease, which would have been practically impossible in the mouth.

Pure gold plate, about thirty-six gauge, is burnished into the metal tooth model allowing it to overlap all margins including the gingival, about the thirty-second of an inch. This provision of overlap is important, as will be shown later on. Another piece of the same gold is now cut large enough to provide the necessary contour, and one margin is trimmed so that it fits within the gingival line of the matrix and is tacked at that point with a

tiny piece of twenty-two carat gold, thus making a hinge. It is now replaced in the metal tooth, wet cotton packed between the two pieces of gold and the outer piece forced out to contour in contact with the approximating tooth. The outer piece is folded over upon the occlusal and the articulator tightly closed upon it. The case is now ready for the next visit of the patient. All the work from the impression to this point can be done by an assistant.

A modeling compound impression cannot of course, be perfect, nor is it essential that it should be. At this sitting the piece is inserted in the natural tooth, the hinge turned up, cotton removed and the matrix carefully adjusted to the cavity, after which the outer piece is turned down again and patient instructed to bite firmly down upon it. It is now removed and the outside piece trimmed all around so that it falls inside the matrix margin, and as near as possible at the true margin of the cavity. Twenty-two karat gold can now be used to solder the margins, the overlap of the matrix permitting the pieces of solder to be laid and retained just where wanted, and the extended margin provides the thin piece of pure gold which has been referred to as a protection to the cement at the joint between inlay and enamel margin. I should have stated that a small hole should be punched with a plate punch in the centre of the matrix before the outer piece is tacked to it. This hole is now to be enlarged with a fissure bur. Through this hole small pieces of twenty karat gold solder are dropped and melted down by being held in the flame of a Bunsen burner, enough being melted in to almost, but not quite fill the interior. The cavity left is for the purpose of allowing the cement to enter and afford additional attachment to the cavity. The inlay is now set with thin cement and after it has hardened, finished like any gold filling.

It has occurred to me that a matrix, formed as described, could be contoured out with porcelain in cases of mesial cavities where the gold would be objectionable, using low fusing porcelain, with a gold matrix, or making the matrix of platinum and using the high fusing bodies. I have acted upon the thought in several cases with very happy results. The platinum or gold lining is not removed but left on, and it makes stronger margins and retains a more perfect margin and fit than would be the case if it were stripped off, as is usually done in porcelain work. The thin line

f metal showing at the margins is not at all objectionable in the back part of the mouth.

GOLD SOLDER VS. TWENTY PER CENT. PLATINUM SOLDER IN PORCELAIN CROWN-WORK.

BY DR. H. E. PHILLIPS, CANTON, OHIO.

At the midnight hour when all is quiet a small noise is far-reaching and distinct, but the same sound at the noon hour when all animal and industrial life are awake would be drowned unheard.

And so at this (coining the phrase), the noontide of porcelain, when so many voices fill the ear of the bewildered beginner, giving widely divergent directions, it seems almost useless to raise so small and obscure a voice as mine.

But I find it impossible to refrain from protesting against the advice given by some of the porcelain workers in the November issue of THE SUMMARY.

One writer in particular gives exhaustive particulars about the construction of porcelain crowns, in which he advises the use of 29-gauge platinum for the band, with a lap of one eighth inch at the joint, soldering same with pure gold.

It seems to me that a platinum band twice the thickness of 29-gauge is rather cumbersome to be inserted under the free margin of the gum and liable to cause recession; moreover, entirely unnecessary, for with the use of Ames' twenty per cent. platinum solder the ends of the band can be butted together and if the contact be perfect they will not separate during the fusing of the porcelain, no matter how high the fusing point thereof.

I have in mind a case wherein pure gold was used to solder ends of band, the cap and band and post, also facing to post. In fusing the porcelain the pure gold was apparently absorbed by the platinum and the whole structure was held together by the porcelain.

It was held together and that was all, for it soon went to pieces under the stress of mastication. Brewster body and enamel was used in this case.

It is only necessary to note the fusing point of the various materials to be used in order to see the logic of using a solder with a higher melting point than pure gold.

As a criterion we will use the Brewster body (and there are several requiring a higher temperature to fuse), which, according to Dr. Le Cron, fuses at 2218° Fahrenheit: pure gold at about 2200°; pure platinum at 3200°, and twenty per cent. platinum solder (Ames' solder, so-called), at about 2600°.

It is hardly necessary to go further into the details of the comparative value of pure gold and twenty per cent. platinum as a solder in construction of the foundation of a porcelain crown when a high-fusing body is to be used.

IS IT PERMISSIBLE TO LEAVE SOFTENED DENTINE UNDER FILLINGS?*

BY H. T. KING, D. D. S., FREMONT, NEB.

Not long ago I read in *The Digest* an article propounding the question: "Is Decalcified Necessarily Devitalized Dentine?" A continuation of the old but never-settled controversy as to whether it is, or is not, good practice to leave a little softened dentine in deep-seated cavities.

It has always been my practice to do so when the removal would endanger the pulp, resulting in its probable devitalization with all its attendant complications, and I do not believe recurrent decay ever occurs unless the active elements necessary to cause it gain access to partially decalcified dentine from marginal leaking. If that should occur, and it may easily do so in time, then I am willing to admit that cavities will run riot and the breaking down of the tooth be much more rapid than if perfectly sound dentine had been reached in excavating.

I cannot help but believe that this procedure is as common today as ever, for I notice that in answer to the question, as sent out by the New York State Society, through its Committee on Practice, seventy-five per cent. of those answering stated that they believed in and constantly practiced it. Mind you, these men were not the lazy men of the profession, but picked men, men who have been in practice long enough to know of the faith that is

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within, and we believe, judging from their standing, do what they do because they think it is the best and right thing to do. Just one example—Dr. Joseph Head says: "I so most unreservedly desire to say that I leave decalcified dentine in cavities when the pulp would otherwise be exposed and find that such denture treated with antiseptics, not only tends to conserve the life of the pulp, but also tends to take upon itself lime salts that cause softened dentine to harden." I claim this last to be true and will speak of it later.

First, let us see why some claim so very emphatically that all trace of decay must be removed or caries will continue under filling. Dr. Ottolengui, in the second edition of his work on "Methods of Filling Teeth," says it is "malpractice to fill over the least particle of decay." Hardly any one would state it stronger than that, and we will see if his argument in support of the proposition will stand. He accepts the theory that it is the acid excretion or by-product of certain forms of micro-organisms that disintegrate the substance of the tooth, and that these bacteria penetrate the tubule beyond the visible evidence of decay.

He says that no germicide is known that can safely be used strong enough to destroy bacteria so situated, at least not at one sitting, and that if all infected dentine be not removed, or if live bacteria be left, decay will continue even if the filling is so well made as to exclude all external influences. The last statement is the one I wish to controvert.

What do we find the physiology of the micro-organism with which we are dealing to be?

First—They have a digestive apparatus by which they break up certain food particles.

Second—They assimilate this food to their nourishment and growth.

Third—They throw off a definite waste product (lactic-acid).

Fourth—They have the power of reproducing their own kind.

It is my claim that the conditions necessary to carry on this life history do not exist in a tubule sealed up by a perfect filling. Not because air is excluded, for it has been found that these bacteria are practically anaerobic, but from want of the proper food supply. I am aware it has been claimed that they may live on

the contents of the tubule; but if this had been proven to be true it would have no bearing on the production of decay, for while Dr. Miller found that the organism could live and grow in beef extract, it was not at home there, and unless sugar is present *no acid* is produced. As it is the acid and not the bacteria themselves that breaks down dentine, then no acid, no decay. No point in the micro-organism theory of decay has been more clearly proven than that the natural food of the bacteria in question is sugar, or some hydro-carbon that may be easily converted into some of the different forms of sugar.

The conclusion then must be that, if in the operation of filling the few remaining bacteria are inclosed in such a manner that their natural food supply cannot be obtained, as soon as the sugar that may be inclosed with it is consumed, then can no more acid be produced and no more harm done. So if no beneficial results could be expected when a little partially decalcified dentine is left as a natural covering for a nearly exposed pulp, it can hardly be judged as malpractice to leave it.

As to the question: What, if any, change takes place in this softened dentine? the answer is not so clear in my mind, and I shall be pleased if the discussion enlightens me.

The writer of the article referred to claims that such dentine is dead and that there is no calcification under fillings; in fact, his claim is that there is no change in dentine after lime salts are first deposited in the basis material or matrix. To prove his position he quotes Dr. Sudduth in "American System of Dentistry," as follows:

"Dentine is a secretion of lime salts under the superintendency of the odontoblasts—not around themselves, but around their fibrils. The thickening of the dentine is by accretion of lime salts in such a manner as to lengthen the tubule.

"The fibrils lengthen as the dentine thickens, and the odontoblasts recede before the forming dentine."

Dr. Sudduth does not say that after the histological formation of tooth is completed in this manner no further addition of of lime salts occurs, or that the dentine does not become harder with increased age of tooth.

Dr. Black says: "In the growth of dentine there is a stratum constantly presented that has not acquired its full amount of lime salts, and is still comparatively soft. In the preparation of de-

veloping teeth I have often cut quite a little thickness of this," clearly teaching that hardening goes on after permanent shape is given tooth by first deposit of lime.

Dr. Truman, in "American System of Dentistry," says: "The change in color of teeth comes through increased density. That in the early periods of development the basis-substance possesses a minimum amount of lime salts, and it requires a period sometimes covering a lifetime of teeth to reach complete development in this direction. A tooth can never be said to be fully formed from the time in which the outer shell of dentine presents on the pulp to the last hour of its use in the function of mastication in the living animal."

If it be true—and we are in good company in believing that dentine continues to harden after it is seemingly fully formed—is it too much to expect that under the slight irritating influence of a filling a mild continued active hyperemia will be set up in the dental pulp, resulting in a renewal of activity of the formative functions of the odontoblasts and a recalcification of partially decalcified dentine?

A FEW IMPORTANT PRINCIPLES OF CAVITY PREPARATION AND INSTRUMENTATION.*

BY W. E. HARPER, D. D. S., CHICAGO, ILL.

By close study of the structure of the enamel, and the form and arrangement of the teeth, and a careful analysis of incipient decay, we will early recognize structural imperfections such as pits and fissures, as one great predisposing cause of decay, and the form and arrangement of the teeth in the arch a second predisposing cause, the latter cause operating by affording inaccessible surfaces or parts of surfaces (as proximal or gingival or cervical third of buccal, labial and lingual surfaces). This inaccessibility of parts of surfaces of teeth results in constant or habitual uncleanliness of the parts, which sooner or later terminates in decay if the environment of the teeth is coincidently favorable.

To these causes of decay in unfilled teeth I would add the

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faulty methods of cavity preparation as a most common predisposing cause in filled teeth, as it has been my experience to note that fifty to seventy-five per cent. of the fillings I have been called upon to make were refillings, a condition which I feel demands our earnest attention. All observing practitioners must have noticed that on certain parts of surfaces decay is practically never found, that all cavities are common to certain localities around which we will always find areas of practical immunity to decay. If this be true, it would seem good policy in all instances to extend the outline of cavities to these immune areas of habitual cleanliness, particularly so if failure to do this results in decay around fillings in so large a per cent. of our operations, as before mentioned. It becomes an important duty to study these areas of habitual uncleanliness and to seek the immune areas that we may protect our fillings by locating the margins within these boundaries by a little additional cutting of tooth substance in one or more directions when preparing the cavity. For this purpose we may divide all cavities into two groups, each group having a different location and cause of decay, and requiring a radical difference in their treatment in cutting to outline form.

Group I comprises cavities occurring as a result of structural imperfections (pits and fissures). All of these cavities occur on self-cleansing surfaces, occlusal surfaces of the bicuspids and molars, lingual surfaces of the incisors, occlusal third of buccal and lingual surfaces. These surfaces and parts of surfaces are constantly cleansed except in these imperfections (pits and fissures), chiefly by the excursions of food and partly by the tongue, cheeks and toothbrush. In all pit and fissure cavities the surface immediately surrounding the imperfections are immune to decay, being self-cleansing, and all that is required in cutting the cavity outline is that you completely remove all enamel undermined by decay, and cut out any imperfections or angular grooves to such a point on the surface of the tooth where a perfectly smooth finish of the filling and tooth surface may be made.

This constitutes the important feature of preparation in this group of cavties, as they are generally simple cavities, having surrounding walls, and all that is needed to complete the preparation is that the floor be cut flat with the flat end of a fissure or inverted-cone bur, and that the enamel wall be cut in a direction parallel with the enamel rods, with a slight bevel on the outer fourth of the enamel. Under-cutting for retention is not neces-

sary if the walls are practically parallel, which would generally be true if the floor is prepared with the inverted-cone or fissure bur as directed.

Note that cavities in this group do not require extension for prevention, nor do we find recurring decay after properly preparing the cavity and placing a good filling.

Group II includes all proximal cavities and those occurring on the gingival or cervical third of buccal, labial and lingual surfaces following the gingival line. This group of cavities occurs as a result of uncleanliness of the surfaces, due to their inaccessibility to the excursions of food and the cleansing action of the cheeks, lips, tongue and toothbrush. That we may locate the labial, buccal and lingual margins of proximal cavities with the least possible sacrifice of tooth substance, we must examine the form of the two proximal surfaces and their contents and consider the habits of the patient as to the care of the teeth, that we may locate the nearest axial line angles (those angles formed by the junction of the proximal with the labial, buccal and lingual surfaces). It should be our aim to cut to this line, which we may recognize by the fact that the enamel is clean and perfect, and we can readily see that the margins located at this point are exposed to the excursions of food in mastication. If these margins are located at a point where they are continually cleansed in mastication, they will also be benefited by the cleansing movement of the lips, cheeks, tongue and toothbrush. You will readily appreciate that all proximal cavities will not be equally large bucco-lingually, as the size of the cavity labio or bucco-lingually will depend upon the form of the two surfaces making contact. For example, if these surfaces be very broad and flat bucco-lingually, we will be compelled to cut the cavity wider to locate our margins, buccally and lingually, of close contact that they may be accessible to the excursions of food in mastication. In these conditions it is important also to remember that a better filling may and will be placed generally, because of the accessibility of these margins and walls, enabling the operator to do much better work. The opposite condition favoring the minimum extension bucco-lingually would be proximating surfaces which are markedly convex bucco-lingually, having a narrow contact and embrasures widening rapidly to the buccal and lingual. In these cases the habitually unclean area is very narrow and in preparing the cavity, the condition would not require much extension to the buccal and lingual

of the contact of the teeth, as a considerable portion of the proximal surfaces in such a case would be accessible to the excursions of food.

Generally speaking, the maximum amount of cutting required in proximal cavities of all teeth, carrying out extension for prevention in its fullest sense, as advocated by Dr. G. V. Black, would be to cut to the nearest angle of a tooth, the line angle formed by junction of the proximal with the labial, buccal and lingual surfaces as, by observation and experience, these angles have proved the safest point at which to locate the labial, buccal and lingual margins in proximal cavities, and the mesial and distal margins of gingival cavities. In teeth with normal contacts, decay on the proximal surfaces always has its beginning gingivally of the contact point. This is sufficient reason for always locating the incisal margin or angle of a simple mesial or distal cavity, in the six anterior teeth, just incisally of the contact point. It has also been proved by experience that decay does not occur on surfaces protected by healthy gum tissue. For this reason we should make it our aim to extend the gingival or cervical margins of our cavities just beneath the free margin of the gum, if there has not been excessive recession by disease or age. This requirement applies equally in gingival cavities on labial, buccal and lingual surfaces.

In cutting the gingival margins of a cavity to locate it beneath the free margin of the gum it is always wise to leave a portion of enamel between the margin of the cavity and the gingival line of the tooth, if this is possible, the enamel being so much harder than the cementum of the root, enables us to secure a more perfect finish of the filling and avoids the great liability of over-trimming in finishing with knives, files and sandpaper discs, as would be the case if these margins were located in the soft cementum. A depression left by over trimming at this point would permit food to lodge and be retained, which would result in recurring decay. For the reason mentioned it is advisable that the junction of the gingival margins with the labial, buccal, lingual, mesial and distal should be cut in very short curves, and located on the axial line angles of the teeth, this being the cleanest part of the necks of the teeth. Most failures due to recurring decay are found in these localities and result from insufficient extension of these angles to the labial, buccal and lingual that they may be protected by the prominence of the angle of the tooth. In those cases in which we

find considerable recession of the gum and in which to carry out the above requirement would result in great sacrifice of tooth substance, we may locate the gingival margin at a point where the interproximal space is sufficiently wide to permit the free use of an ordinary wooden toothpick along the full length of the gingival margin, and this use of the toothpick should be recommended to the patient in these cases.

Faulty preparation of the floor or seat of those cavities in which the fillings are exposed to the force of the bite is a common cause of failure. The rounded or concave form given to the floor of these cavities is the chief cause of failure; this is readily appreciated when we consider the tremendous force to which these fillings are exposed, varying from one hundred to three hundred pounds. In testing the bite, using the molar teeth for this purpose, we will find as many people able to bite over two hundred pounds as will be found able to bite less, and quite often two hundred and seventy pounds is reached, this being the limit the Knatho-dynamometer will register. Meats require for their proper mastication from thirty to one hundred pounds, and it requires a force of one hundred to one hundred and fifty pounds to crack some nuts—filberts for example. The power required to masticate various foods, as well as for other purposes, is exerted without any discomfort by most people having good teeth and healthy peridental membranes, and is a fair estimate or measure of the force to which our fillings are exposed. If, in the mastication of meats, we accidentally bite on a bit of gravel, shot or bone, it will be fair to say that a force exceeding two hundred pounds is exerted, as we will generally experience a severe jolt under these circumstances. If this accident should occur on a proximo-occlusal filling it would very severely test the resistance and retention form of the cavity and the strength of the filling material. These facts will impress upon us the importance of considering the resistance and retention form of a cavity exposed to the force of mastication, and we will readily appreciate the necessity for the formation of a flat seat that we may most effectually resist the great pressure. The floor or seat of all such cavities should be cut flat and in a plane at right angles to the direction of the force. With such a preparation there would be no disposition of the filling to slide or move in any direction under the force of the bite and there will be much less strain brought to bear on the retention form of the cavity. The preparation of the floor or seat of a

cavity is made with the flat end of an inverted-cone or fissure bur, held with the hand-piece parallel to the long axis of the tooth: cut in this manner the floor will be flat, with definite angles at its junction with the surrounding walls. This angling would be all the retention form needed in simple occlusal, labial, buccal or lingual cavities, but let it be understood that this squaring out for retention in all instances must be in the dentin, the form of the enamel wall being a separate and distinct consideration, and is prepared by cleaving the enamel in a direction parallel with the enamel rods and cutting on its outer fourth a slight bevel to insure removel of enamel rods unsupported by dentin, and a strong enamel margin against which to place the filling. In deep occlusal cavities we may not find it possible to cut the entire floor flat, as the depth centrally would expose the horns of the pulp if extended. In such a case we may prepare a flat seat where the floor joins with the surrounding walls, leaving a concavity in the center; this shelf will serve as a seat for the filling.

Objections may be raised to this squaring out of cavities and the forming of definite angles as described, on the ground that angles cannot be as perfectly filled with gold as a rounded groove or cavity, also a rounded form of the cavity has been considered desirable on account of the spheroiding tendency of amalgam. Both of these ideas are wrong. It has been conclusively proved by a long series of laboratory experiments that square angles can be filled by the use of ordinary plugger points and a proper direction of force much quicker and better than with a rounded form of the cavity, because there is no disposition of the gold to curl or ball up in filling these square angles, a difficulty so common to those who attempt to fill a cavity with a concave floor. This balling up of the gold is caused by condensing it against a surface inclined to the direction of the force of the plugger and is only overcome by the operator holding the filling until the entire floor of the cavity is covered and the mass anchored between the surrounding walls. In the absence of force, amalgam as used for filling will not change its shape and there is no tendency to spheroid. The curling from the margins of a cavity, so often seen in amalgam fillings, is due to flow of the filling and is caused by the filling crawling or moving under the force or weight of the bite; this fault has been interpreted as spheroiding. This condition was much more common a few years ago when the slow-setting silver-tin amalgams were so popular with the pro-

fession, these amalgams flowing very much more than those generally used at the present day.

If it is possible to fill square angles, it also impresses upon us the importance of resorting to square grooves for retention purposes instead of the rounded form. Grooving for retention purposes is practically confined to mesio and disto-incisal cavities of the incisors and cuspids. A square groove offers retention in its entirety, whereas a round groove offers no retention until it is deeper than its diameter. This may be illustrated by cutting a groove half a millimeter deep with a burr one millimeter in diameter; this groove is not retentive, whereas, if such a groove were cut half the depth and squared out it would offer abundance of retention.

EXPANSION OF PLASTER OF PARIS AND ITS BEARING ON THE USE OF THIS MATERIAL FOR IMPRESSIONS AND MODELS.*

BY J. H. PROTHERO, D. D. S., CHICAGO, ILL.

To secure the best results in any of the arts or sciences it is essential that the artisan or scientist, in addition to an accurate conception of the underlying principles involved and the necessary skill and ability to carry out the details, should have an intimate knowledge of the materials which he handles. In other words, the physical properties and peculiarities of the substances he uses or experiments with should be thoroughly understood if the highest results are to be attained.

This applies to all branches of dental science in general, and to prosthetic procedures in particular. One of the most essential and commonly used materials in the dental laboratory is plaster of Paris, which for many purposes has no substitute. Like many other materials in common use, it has both valuable qualities and detrimental properties. Its useful properties are too well known to need mentioning here, as all are familiar with them. It is to one detrimental property in particular, viz.: expansion, that I wish to call your attention to day.

While the tendency of plaster of Paris to expand during and after setting has long been recognized by many, the effect of this

*Read before the Nebraska State Dental Society, 1903.

movement on denture construction has not received the attention it deserves.

There is no doubt in the minds of close observers that this detrimental movement is responsible for some of the many failures in denture adaptation. When freshly mixed plaster begins to set it contracts slightly, then expands, and in assuming a thoroughly dry state again contracts to a very slight degree. Some heat is noticeable during the setting process, which is very likely due to the more intimate union of the water and calcium sulphate than occurs when first mixed. In this process the dehydrated calcium sulphate becomes hydrated, while a more or less imperfect form of crystallization results. In an ordinary mix of plaster of Paris, one which sets in from one to three minutes, the contractile period usually lasts from one to four minutes or until the evolution of heat becomes apparent. Then follows a short period of inertia, after which expansion begins. The expansive movement usually sets in slowly, increases rapidly after a minute or two and then decreases, gradually at first, then more slowly until all movement ceases.

Usually the greatest expansion is over in ten minutes although the movement sometimes continues in a gradually decreasing ratio for twenty-four hours.

The rate and amount of expansion is very greatly influenced by the manner in which the plaster of Paris is mixed with the water, or, in other words, the manner and length of time the mass is stirred.

Long or rapid stirring greatly increases both rate and amount of expansion; while conversely, stirring the mass slowly and very little will not induce an excessive movement.

For the purpose of accurately measuring the expansive movement of plaster of Paris and the effect of varying methods of manipulation, I have constructed a micrometer for registering both expansion and contraction. This instrument is graduated to read to the one-ten-thousandth of an inch, or the one-five-hundredth of a millimetre. The inch fraction is the unit of measurement used in my experiments. In reality, readings can be made to the one-forty-thousandth of an inch. The spring actuating the contact rod is delicate and offers but little resistance to expansion, so that very nearly all of this movement can be noted.

The following records show the result of stirring the mass of plaster and water varying lengths of time. Stirred in the ordinary manner, nothing in water to accelerate setting.

Plaster added to water:

Stirred	¾ minutes,	2 points	in 10 minutes,	or a total	of	101½
Stirred	1 minute,	32 points	in 10 minutes,	or a total	of	113½
Stirred	1¼ minutes,	61 points	in 10 minutes,	or a total	of	118½
Stirred	1½ minutes,	93 points	in 10 minutes,	or a total	of	134
Stirred	2 minutes,	118 points	in 10 minutes,	or a total	of	157½

Many experiments have been tried with different substances, single and in combination and in varying proportions, in an effort to determine some means of controlling this movement, but so far only partial success has been met with. The best results have been secured by adding sulphate of potash in definite proportions to the water used in making the mix and stirring the mass very little.

In prosthetic procedures the principal difficulty resulting from expansion is in the warpage of impressions and models when allowed to stand in the tray for any length of time after the plaster of Paris has set. Perhaps the best illustration of this defect is shown in the experiment first described by Dr. W. Bowman McLeod, of Edinburgh, Scotland. On a flat slab around the margins of which were firmly attached metal bars, plaster of Paris was poured and allowed to remain twenty-four hours. The plaster was then sawed diagonally through the center, when it was found it had arched up in the central portion, having left the slab to a very considerable extent, while the margins remained in contact with the slab.

This was due to the fact that lateral expansion was prevented by the bars, which, however, did not confine the material on its upper surface, so that movement occurred in the direction of least resistance and accounted for the arching of the plaster in the center.

Comparing the slab with its side bars to an ordinary upper impression tray, we will find that the sides of the tray act as points of resistance to lateral movement just as the bars did on the slab. The palatine portion of the tray, on which the plaster rests, is usually quite convex and in no way retards the movement of the plaster away from this portion of the tray. In examining the plaster impression which has been in the tray some time, it will be seen that the central or palatine portion has arched away from the tray, while the sides impressed by the alveolar ridges are in close contact with the floor of the tray. This constitutes warpage

of the impression. Now if the model be run up and allowed to stand in the impression for any length of time it will also be warped, the sides of the impression supported by the tray acting as points of resistance and preventing lateral expansion. Two errors or warpages have thus occurred, which render the model an imperfect production of the mouth it is supposed to represent. A denture moulded over such a model will touch the palatine portion of the mouth before it is firmly seated on the alveolar border, and under stress of mastication will readily tip, while in many instances there will be no adhesion whatever.

To overcome warpage and compensate for expansion to as great an extent as possible the following suggestions are offered:

An ordinary mix of plaster of Paris suitable for a good sized impression requires about 40 cc. of water and 55 grms. of plaster. To the water, before the mix is made, should be added 5 grms. potassium sulphate, and thoroughly dissolved. The plaster is then slowly sifted into the water and the spatula carried slowly through the mass and around the sides of the bowl with a sweeping motion, just enough to insure a uniform mix. Then place quickly in the tray, and if too soft for introduction in the mouth, wait until it has set sufficiently to meet the requirements of the case and then proceed.

The same general plan should be adopted in mixing the plaster for a model, except that it can be made a trifle thicker at the start. Mixes made in this manner and stirred only to a very slight extent should not expand more than ten or fifteen points, while if stirred in the ordinary manner and without the addition of potassium sulphate, the expansion may run to one hundred or even one hundred and fifty points.

Immediately upon the removal of the impression from the mouth it should be trimmed on those surfaces impressed by the hard areas of the mouth, especially in the central palatine portion, the surfaces covered with some separating medium, and the model run up. As soon as this has set sufficiently to permit, the tray should be removed from the impression and the latter from the model. By following this plan considerable warpage is obviated but it does not check expansion. To compensate for general expansion, the model can be scraped around the periphery, along the line where the labial and buccal margins of the denture will rest, and also across the distal palatine portion. The scraping on the labial and buccal surfaces should be done with a spoon-blade

scraper of the Kingsley type, or some similar instrument, and that across the palatine portion made sharp and definite at its distal margin, so that the denture when fitted will imbed itself slightly in the soft tissue.

I believe we will eventually be able to control expansion, perhaps by the addition of something to the plaster of Paris or by some change in its mode of preparation at the mill, but until that times arrives the utmost care should be used in the preparation of impressions and models for dentures and the various steps carried out without loss of time.

ESSENTIAL OILS.*

BY J. R. SHANNON, D. D. S., WEEPING WATER, NEB.

It is not my expectation in this paper to offer you anything new or original, but have merely tried to collect some information about the "essential oils," that we may become more familiar with their uses and action.

There seems to be some difference of opinion as to their merits and demerits, yet they seem to possess many qualities that make them desirable agents for use in the oral cavity; they cover such a range in their action that all pathological conditions of the oral cavity may be treated by them singly or in combination.

Their diffusibility being a quality that renders them most valuable agents. They do not coagulate albumen and then most delicate canals may be washed by them without any danger of being clogged. It has too often been the habit of the dentist to select one of these oils merely with its antiseptic property in view, and in times past the practitioner has considered them merely as a group of antiseptic agents, selecting indiscriminatingly without any regard to their action further than being able to destroy the micro-organisms or their products, never considering their action on the surrounding soft tissues.

The more recent experiments have made it possible for us to choose from them more intelligently and only those that are applicable for the case at hand.

What success can we hope to meet with if we seal in the tooth an agent potent enough to destroy all forms of bacteria, if it be

*Read before the Nebraska State Dental Society, 1903.

of such a nature that its contact with the soft tissue would only cause an aggravation of the condition?

With the oils classified for us, both as regards their antiseptic potency and their therapeutic action on the surrounding soft tissues, we should be able to choose only those that are suitable for the case.

They may be classfied as follows:

First—Irritating or stimulating antiseptics, and in this group are oils of cassia, cinnamon, and myrtle.

Second—Quieting, soothing or sedative antiseptics, as oil of cloves.

Third—In this group, eucalyptol, cajupet, Black's 1, 2, 3 are neutral agents.

In selecting these oils for the various treatment cases it is necessary their selection be made intelligently and with a knowledge of their action other than that of antiseptic. It would not be good practice to use in a tooth an oil as a dressing that is so powerful as to destroy all infectious material of the pulp canal and at the same time so irritating that its contact with the soft tissues would produce in a short time an inflammatory condition that would result in the formation of a blister. Is it not also important in treating a condition where inflammation already exists to select an agent that will not only be antiseptic, but will be soothing and not aggravate the pathological conditions, and continue the inflammatory movement?

If the antiseptic quality alone is to be considered, oil of cassia is the most potent, also one of the most irritating. It may hardly be safe to advocate the use of oil of cassia, for I am well aware of the criticisms and objections to its use, the discoloration of the tooth being the principal one. Where a potent antiseptic is indicated, one that is diffusible and will penetrate without coagulation, this oil is a desirable one.

It may seem unfortunate that so potent an antiseptic as cassia should possess such irritating qualities, and yet are there not cases that such agents can be used to advantage? In treating a chronic abscess, where the cellular activity of the entire fistulous tract is dormant and the use of mild antiseptics fails to accomplish the desired results, cassia may be used in solution or full strength, forced through the tract, and hasten the activity of the tissues to return to a normal condition.

In treating cases of pyorrhea, where the same conditions exists, it can be used to good advantage, or in the treatment of any tissue where a good antiseptic and stimulating agent is needed, this role is found in the oil of cassia.

Oil of cinnamon is so nearly allied to cassia in action that they may be used interchangeably.

The oil of myrtle, belonging to this same class, does not possess these qualities to the same degree, yet is of sufficient potency to be of great value. While it is too irritating for general use, it may be used to good advantage in treating the soft tissues where there seems to be some inactivity of the cellular tissue, following the formation of a blind abscess; and where the best results can be obtained by sealing it in the tooth for a few days. It will not aggravate the condition nor over-stimulate the parts, but merely excite the cellular activity necessary to restore it to a healthy condition.

Oil of cloves belongs to that group of sedative, non-irritating antiseptics, and is one of the most useful of the essential oils. It is absolutely non-irritating, even when kept in contact with soft tissue for some time. Even when applied to inflamed tissue, it imparts a quieting and soothing effect not obtained by any of the other oils. As an antiseptic it ranks along with campho-phenique and creosote and is sufficiently potent to destroy most forms of bacteria, not in the treatment of pulpless teeth. The combination of these two qualities renders it a most desirable agent in treating teeth where the infection has passed through the apex and set up inflammation in the surrounding tissues. It may be sealed in root canals without fear of aggravating the condition, but its quieting effect will soon be noticed in its restoring to a normal condition those tissues that are the seat of trouble. Dr. Peck says his experiments have proven that in cases where any soreness or irritation followed its application it is due to an inferior quality of oil, one that has been adulterated, and the irritation that follows is due to the materials used for adulterating purposes and not as a result of the cloves.

Cajupet, eucalyptol and Black's 1, 2, 3 compose the third group and are the neutral agents, as they do not irritate the parts, neither do they impart a sedative action to the inflamed tissue; the 1, 2, 3 being the most potent antiseptic and one used perhaps by more dentists than any other agent. There seems to be no condition about the teeth where a sedative or irritating agent is

not indicated to which Black's 1, 2, 3 remedy is not applicable.

Cajupet is slightly antiseptic, and being a solvent of gutta-percha, is used to moisten the walls of the root canals before filling with gutta-percha points.

Eucalyptol is the active principle of oil of eucalyptus and is perhaps more commonly used than the oil. It is non-irritating and only a mild antiseptic. It is used as a root-canal dressing, combined with iodoform. In this connection the odor of iodoform is so disguised that it is not objectionable, and the combination is said to be a very effective one in treating putrescent canals.

Eucalyptol, although not a powerful antiseptic, is potent enough to maintain an aseptic condition where it is desirable to defer the filling to some future time. Being a good solvent of gutta-percha, it is used to moisten the canals before the chloro-percha filling is inserted or to moisten the walls of a cavity before the gutta-percha or temporary stopping is packed in it. After the use of any of the oils the cavity should be well washed with alcohol before the insertion of cement, as they prevent its adhesion.

Then, considering their range of action as antiseptics, their irritating and sedative action, diffusibility and their absolute freedom from any injurious effect to the patient from any accidental contact with the mouth, they comprise a group of agents which are very important to dental materia medica.

A GOOD WAY TO INSERT A DAVIS CROWN.*

BY T. A. GOODWIN, D. D. S., WARSAW, IND.

The first thing to do is to select a tooth the right color and proportion. After filling the cavity in the crown, take Goodwin's swaging outfit and fill with Melotte's metal, and while the metal is hot, insert the crown, neck downward. Then take a piece of platinum and with wood and cotton, swage it to fit the neck of the Davis crown. Now take a platinum post, cut the right length, solder it to the piece of platinum so that the hole in the tooth, when put on, will fit perfect.

Now you are ready to prepare the root, which you do the same as for a gold crown. Take the measure of the root with a fine wire, take a piece of gold and make a band to fit the root.

*Presented at Indiana State Dental Society, July, 1903.

After fitting the band, take off and burn it into a piece of wood, (soft wood), the end fitting the root down. Then with a press, and a piece of wood on top of the tooth, with the platinum in place, press it into the gold band. Now take the tooth off, invest in plaster and sand with platinum in place in the band, solder and finish. Cement your tooth on the post, after which it is ready to insert in the mouth with cement.

TREATMENT OF INTERSTITIAL GINGIVITIS AND PYORRHOEA ALVEOLARIS.*

BY L. A. SALISBURY, D D. S., CROWN POINT, IND.

Obtain surgical cleanliness of parts affected with suitable scalers and polishers, using sublamine as a germicidal solution for instruments. In the interstitial, or first stage of the disease, *where pus is always absent,* use a hydronaphthol solution in alcohol, injecting thoroughly around the teeth, prescribe plenty of fresh air and exercise, and three pints of pure water daily, with massaging of gums twice a day at least.

In pyorrhoea, or second stage, pus is always present. Obtain cleanliness of the parts with instrument and polishers, using either sterile water or dioxogen to wash out debris, then inject lactic acid into pocket, using also sterate of zinc to prevent the acid affecting tissues. Iodine should be applied at least once a day, with thorough gum massage, using an astringent wash of hydronaphthol alcohol, four pints of water internally per day and cod-liver oil. In cases where the operator does not have the co-operation of the patient in keeping teeth absolutely clean, but very little can be done, but in cases where he does the prognosis is usually favorable.

PORCELAIN INLAY, USING GUTTA-PERCHA FOR IMPRESSION.†

BY W. W. SHRYOCK, D. D. S., FORT WAYNE, IND.

After the cavity has been prepared so that an impression would withdraw without the slightest change, by making it larger

*Demonstrated before the Indiana Dental Society, July, 1903.
†Demonstration at Indiana State Dental Society, July, 1903.

at the entrance than at the depth, and the enamel margins finished with the finest stones.

The cavity is then wiped with vaseline, the gutta-percha warmed over a flame slowly, and rolled in the fingers, then forced into the cavity and cooled before removing. The impression is then filled and built up with amalgam, after hardening, open and invest in the Ash swaging device for inlay swaging, the matrix then swage, and the baking of the porcelain follows.

The Hammond electric furnace is controlled entirely by the watch instead of injuring the eyes by watching for pure gold to fuse.

DESCRIPTION OF A GOLD INLAY.*

BY T. A. GOODWIN, D. D. S., WARSAW, IND.

The first step in making a gold inlay is to prepare the cavity as you would for any other filling, without undercuts, and take an impression in modeling compound of the upper and lower jaw, like the one represented at this meeting.

Put this in a small articulator, and after opening, mark the outlines of the cavity with a pencil, fill with plaster, oil upper teeth, close together to obtain articulation, and set aside to harden. After this process is completed, carve the plaster as near like a tooth as possible and cut out the tooth containing the cavity. Then take Goodwin's swaging outfit, fill with Melotte's metal, and while the metal is hot insert the tooth. Now cut a piece of gold, a little larger than the cavity, and swage with cotton and wood, and by use of the pencil marks on the tooth we are able to cut the gold exactly like the cavity. After soldering a loop to the back of the inlay, it is ready to insert.

Now apply the rubber dam, wash out the cavity good, fill with cement, also filling the loop, and insert your inlay.

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*Presented at Indiana State Dental Society, July, 1903.

PRESIDENT'S ADDRESS.*

BY J. F. STEPHAN, D. D. S., CLEVELAND, O.

Through your friendly courtesy it becomes my pleasant duty to preside over the forty-fourth annual meeting of this Association, and I want to assure you that I am profoundly grateful for the honor you have conferred upon me.

In assuming the duties and responsibilities incident to the presidency of the oldest dental organization, I should feel my inadequacy did I not know that I shall have your indulgence in my shortcomings and your hearty co-operation in my endeavors to give this meeting the high place it deserves. When we begin to consider the success of any organization of persons gathered together for a specific purpose, we cannot but realize that that purpose will be carried out only in proportion as each individual does his part.

We all recognize that the dental society is one of the greatest powers for good in bringing out and distributing the advanced knowledge of the profession. It deserves our support not only in paying its dues, but in attendance and in extending and broadening its influence.

Our membership comprises only a small percentage of those who are eligible, and a determined effort should be made by each individual to make our organization representative. Do not leave the work to be done by the officers, for they cannot do it alone, but make it your individual duty.

It is true that the practice of dentistry tends to narrow men, and that there is nothing in the actual work to develop in them the spirit of participation or co-operation. This is all the more reason why they should attend their professional meetings.

In the intense effort along material lines manifest in the present day it would sometimes seem that the true professional spirit was in danger of being lost. It is this spirit which imparts to man the impulse to work unselfishly for the common good, to dig out the hidden mysteries of the forces of nature and apply them to the betterment of the profession. It makes him study early and late that he may learn something which shall be of benefit to mankind. This brings to mind the immortal Agessiz

*Read before the Northern Ohio Dental Society, June, 1903.

who refused an offer of fifty thousand dollars for a winter's course of lectures, saying he did not have time to make money. He had a just appreciation of the great value of work for the benefit of humanity, and felt that he would be wasting valuable time in selfish ends.

The true professional man works that the knowledge he acquires may lead to the alleviation of human suffering and not to establishing a selfish reputation.

The knowledge which we possess is given us as a legacy, whether obtained at college or by reading or otherwise: to be held in trust to be passed on to the future generations with whatever of truth we may be able to add.

From earliest time the foundations for our present knowledge have been growing.

Reasoning powers have been given to every intelligent mind to weigh and analyze the subjects that are daily brought in contact with the mental powers. Since it is the evident purpose that we progress, that reasoning power is given us that we may discard that which is false and hold fast to the truth, adding to this all of truth we may discover.

There is absolutely no doubt that the profession is progressing in its ability to cope with the problems that are presented to it, notwithstanding the cry of the pessimist that we are not doing as creditable work to-day as we did forty years ago.

Through our better understanding of physiological and pathological conditions it has been possible to relieve suffering and restore partially lost organs to health and usefulness which formerly were thought hopeless.

The work of this society in the past and the work it is destined to do in the future, through increased individual effort, will prove that we are continually pressing toward higher standards.

In order that it be possible for our members to receive the benefit of the individual research work that is carried on throughout the profession, I should suggest that a committee be appointed to be known as the original research committee. This committee to use its efforts toward encouraging original research along the lines of insufficiently understood or disputed questions; to request men known to be specially interested, as well as others, to work on special problems, and to make an annual report of the progress made during the year.

The athlete through exercise produces new muscles, the

musician through practice gains speed and accuracy, and the student through education increases brain capacity.

Now since new thinking creates new brain power there can be no estimate of the value of the report of this committee in awakening new ideas in the mind of some searchers after new truths.

When we hear of some brilliant worker who does not live within the limits of our Northern Ohio, I am heartily in sympathy with the principle which prompts us to ask him to come before us and give us the results of his labor. Our association is a place where all can bring the results of their individual efforts.

The clinics demonstrate new ideas and teach new methods of performing the ordinary operations and are often of great value. The influence of the clinic is limited to the very few who may be fortunate enough to get close to the clinician. I believe that a classified report of the clinics, given at a stated hour late in the session, together with a discussion of the same would greatly increase their value. In order to accomplish this they should be held at sometime other than on the last meeting day, as is customary at present.

Clinics are often given to illustrate some new appliance or device. New appliances having great merit are constructed many times at no small cost in time, labor and money, which through some reason or other are never shown beyond the confines of the inventor's office.

These may be of infinite value to the profession, and I believe a committee of at least three members should be appointed to make an exhibit that shall contain the latest inventions and improvements.

The association should be made responsible for the safe return of these new devices so that when the committee makes a request for the loan of an article they may be reasonably certain of a favorable and willing response. It should be known as the New Appliance Committee, and should make an annual report of its work.

Through the efforts of such a committee a demand for many excellent devices might be created, so as to make it advisable for the manufacturers to secure the models and place the instrument at our disposal.

The profession does not fail to take advantage of new ideas or new things. This is a very practical age and is certainly not slow in the application of its technical advances. In applying

some of the advanced theories advocated, we have sometimes failed in accomplishing what another has claimed to be an easy matter, because, perhaps, he has omitted from his description some essential detail he took for granted we were familiar with.

If those who are advocating new methods, or even describing what to them are old methods, would be more careful to give that little essential point or special precaution without which success in the particular method cannot be obtained, it would often save his brother practitioner great annoyance and the patient possibly much suffering and torture. In other words he should tell just how he does it or why it is done. It may help some one of us out of our difficulty.

Do not think that I wish to open the doors of our meetings to long, tiresome and irrelevent discussions. It is always detrimental to the success of a meeting to have some few among those who discuss the essays exhaust the possibilities of the subject in the first few moments and then by repetitions and dragging in things foreign to the subject waste valuable time. Emerson designated such people "devastators of a day."

I have endeavored to outline a few points in which we might possibly give our association greater influence than it has ever known before.

If I have emphasized the value of the individual effort of its members it is because I honestly believe that without it our meeting cannot receive its full measure of success.

It is my earnest desire to fill my office acceptably and to open the meetings promptly.

I wish to thank the Executive Committee for the excellent work they have done in bringing out this year's program and those who have listened to me, for their kind attention.

SOCIETY PROCEEDINGS

INDIANA STATE DENTAL SOCIETY.

DISCUSSION ON DR. TILESTON'S PAPER, "THE RATIONALE OF THE GOLD INLAY."

Dr. G. B. Perry:—If a tooth is so far attacked by dental caries that it is a difficult matter to fit an inlay properly—and an inlay must be fitted properly if it is a successful operation—it seems to me it would be wise to crown the tooth rather than to attempt an extensive inlay. There is a difference in the quality of gold. A 30-gauge gold may be gotten from one manufacturer that will work beautifully. The same gauge of gold gotten from another manufacturer may work hard and in a stiff way. In order to have a successful conclusion in this work it is necessary to get your matrix well adapted. The preparation of the cavity walls so the impression compound will not stick at any point is another important feature. If the impression is well taken the after-fitting of the matrix may be made in the mouth. I never have followed just one method of procedure. I have usually made mine in the mouth direct.

METHOD OF MAKING THE INLAY.

I prepare the cavity carefully, so that there will be no undercuts that cannot be obliterated, and if necessary fill them in with cement. Then I take a piece of metal of 35 or 36-gauge, thoroughly anneal it and burnish it into the cavity carefully. Then I take another piece of metal and get the contour in a similar manner to Doctor Tileston's, with the exception that I do not use the wet cotton. I do, however, use gutta-percha, which I soften partially, just enough so that it can be manipulated with an instrument. I put it in and then heat the top of it so that it works a little softer than the portion underneath. Then I take a burnisher of whatever shape the cavity calls for, and gradually but carefully press the metal toward the point of contact of the other teeth. In that way I shape the outside wall according to my idea of the proper contact, and then fill the cavity with solder, or very nearly so.

GOLD INLAYS VS. PORCELAIN INLAYS.

I think gold is the most serviceable and satisfactory material we have for filling. I know that is in contrast with some of the statements made, particularly by the porcelain enthusiasts. I believe there is more service

in a gold inlay than in a porcelain inlay where it is placed on the occluding surface. The physiological outline should be considered. I think the constitution, if I may use that word, should be considered. If a patient presents himself to you and you find that he has a large, angular, square jaw, I believe in the majority of cases of course your own judgment should decide which cases—a gold inlay would give better service than a porcelain inlay. Gold is the best material we have, though not as esthetic in its appearance as porcelain. The gold inlay will not show the marks of wear, will not check, and its cohesive properties are greater. The brittleness of the porcelain will make it check or break off.

CAREFUL MANIPULATION AND SUCCESS.

The care and the manipulation of these inlays from the start to the finish, is wherein your success depends. It is not always possible to get as good a result as you would like. In addition to the working qualities of the gold we must always consider the working qualities of the solder. Different manufacturers mix their ingredients in different proportions. The greater amount of zinc the easier the flow. Then the color must be taken into consideration. In the gold inlay the joint should be so carefully covered by the lapping of the pie e which is used for contour that it is practically indistinguishable.

Doctor Tuller:—All Doctor Tileston has said in regard to the value of a gold inlay—or any kind of an inlay—over a gold filling I thoroughly endorse. I believe in the porcelain inlay when it is made as it should be, when it is adapted to the walls of the tooth and made with sufficient strength. I do not relegate the porcelain inlay to the background on account of the gold inlay. There is no question in my mind or in yours but that the gold inlay is a much stronger piece of work than the porcelain; but I do contend that we can make a porcelain inlay strong enough for all the work that is to be brought upon it. I always use the porcelain inlay when I feel it is the best thing to do.

ANOTHER METHOD OF MAKING INLAYS.

Now I have a little different method of making gold inlays, something that is original with me. In a great many of the cavities, for instance in the occlusal portion of the tooth, I take several layers, perhaps a half sheet of gold foil, and fold it over and over until I have made a little square that will cover and leave a margin all around my cavity. I put that in the cavity, press it down with cotton, or take a piece of crystal gold and force the gold filling into the cavity with the crystal gold, tightening it down thoroughly into the bottom of the cavity so that it forces the filling into all the recesses of the cavity. I pack it hard enough so that a spur of gold into the center of it, made from a little clipping of my gold plate. I make the cavity in the first place so it will draw. I use a little vaseline when I start. By manipulating that a little I lift it out. It will withdraw from the cavity very easily. I take that into my laboratory very carefully, and pour the investment over it. It only takes a minute or two to harden. I make that as thin as possible. If I get it

too thick I scrape it away again, but do not expose the gold; if you expose the gold you are apt to melt it down. If you leave a reasonable thickness of the investment over the bottom of it the gold will not melt. Now I take and put 18-carat solder on the top of it, and by heating it on the under side draw the solder through until it is absolutely filled up. The gold filling will carry it over the margin as you desire to have it. When I have filled it up and am satisfied it is well filled and hardened I take it out and clip away all the overhanging margins. Before I put the gold spur in there I have the bite taken in the crystal gold. That gives you a bite exactly as you want it. Next put your little spur down in there and lift it out and you have the thing in the shape you want it.

Now you will perhaps think the 18-carat solder would give it too much the color of the 18-carat solder, but when that solder is drawn into the crystal gold you get at least a 22-carat gold appearance. It has a far richer appearance than an 18-carat solder would indicate.

The method I have described applies to a simple cavity. This I can make in a short time. If I want to I can go to work and set that in a piece of modelling compound and finish it up almost as I want it before I put it in the cavity, so that when I come to dress it up in the cavity there is very little to be done. I do that finishing process largely outside of the mouth, which is a great advantage. It is a very disagreeable thing to most of the patients to have it finished in the mouth.

INLAYS FOR COMPOUND CAVITIES.

Now when I come to a compound cavity I follow the same method Doctor Tileston does, with the exception that I do not cover the top of the inlay. I sometimes use, instead of gold foil in most of these compound cavities, a pure gold, from 32 to 36. I solder a piece on the proximal side of that to enable me to get my contact point with the adjoining teeth. I then have a sort of pocket there in which I can fill in the crystal gold in the way I have described. If you have an ordinary gold plate you can get under the edge of it and lift it out, but if you are using gold foil you cannot, and you must have that little spur in there. Where I use the pure gold I take it out of the cavity, after I have shaped it to the cavity, take it to my Bunsen burner and throw a little gold solder in the bottom to give it stiffness, and sometimes, fearing I may have warped it in some way, I take it back to the cavity and readjust it. I then take a German silver wire and put it in the bottom of the cavity, often melting a little of the solder on the end of it to make it hold a little better, and I put that on the bottom of the inlay and solder it. I then cut it off, leaving the same projection I would have if I stuck a spur down there. I have something then to lift that up with without lifting up the margin. I put this wire in in such a way that when taking the bite it does not interfere at all. It is very convenient to have that wire there sometimes in working the inlay out of the cavity. I like to use it when I can. I usually bring it over afterward to the other tooth in such a way it does not interfere with the bite.

Now, I contend there isn't anything better in the way of a filling for

a tooth than either a gold inlay or a porcelain inlay. As the Doctor has already stated in his paper, we have a minimum amount of cement, and usually we have a thinner layer of cement in a gold inlay than in a porcelain inlay. I believe the cement is the best possible thing to lie in contact with the walls of the tooth to prevent it from decaying. This gives as nearly an ideal process as we can have in preventing the destruction of the tooth.

Dr. T. A. Goodwin:—When I make a gold inlay I always swage it to get the articulation and to make an inlay that is perfect, that will fit the cavity perfectly and I always make the under part of the gold beveled so that it will lay all over the cavity, and when it is cemented in there is no space around it at all.

Doctor Hunt:—If it were not for the weakness of the joint between the filling and the tooth substance, I think the gold inlay would be one of the most charming things in the world.

Doctor Tuller:—But that is not weak.

Doctor Hunt:—But you have a space there which has to be filled with something. You fill it with cement, and we all know cement is a lovely thing to contemplate from a distance, but when you get close to it it occasionally smells bad, and you want to get away from it again. That is the truth with all those inlays, gold and porcelain. They are beautiful to contemplate; I love them; but the adjoining point between them and the tooth substance is uncertain; you cannot depend upon it, and it occasionally gets away and when it does it is very bad. I don't believe in gold inlays when you have to set them with cement. I cannot believe that anything we have to set with a substance which is liable to wear out and get away, is the best.

Doctor Redmond:—I have made many gold inlays. It always seemed to me that there ought to be something in there to hold them in. I have been watching one of Doctor Goodwin's gold inlays in a bicuspid. It has been there eight or nine years. Over two-thirds of the crown is a swaged inlay, and I have been watching anxiously for it to come out so I could see what he has in there. I know one thing, and that is that that inlay is a fine piece of work.

Doctor Hunt:—He probably clinched it on the other side.

Doctor Tuller:—I have a gold inlay I have been wearing for fifteen years. I put it in fifteen years ago, and I am waiting for it to come out.

Doctor Jameson:—I think Doctor Hunt sprung something there that is a fallacy. Cement is a good deal like himself—he is all right here, but get him in a corner and pinch him up and he is different. Cement is put in under pressure. Where there is a minimum amount of it it acts differently from where it is put in in mass. There is a different principle here from what is popularly supposed. The cement filling, we know, braces the walls and holds the tooth up, but it is an element of weakness

itself. Even when a gold crown is put on under pressure it stays for years and years, and the cement stays in position as nicely as you could wish, because there is a close joint and because it is put in under pressure. I think this idea of a chain being as strong as its weakest link is true, but the weak point is not always the cement, it is in the lack of bulk in the filling and the lack of manipulative ability in making it.

Doctor Goodwin:—I should like to ask Doctor Hunt if he ever saw a gold filling give out that way?

Doctor Hunt:—I still stick to it that cement is weaker than gold, and I still insist that a cement joint is weaker than where there is tooth substance. Men whose veracity I cannot doubt—because they are larger than I am—tell me gold inlays last forty and fifty years—isn't that it?—but I still believe the cement will dissolve at times.

Doctor Blakeman:—It seems to me the test for all these cases is in the mouth where the teeth are very soft and scarcely anything will wear well in them. Take a case where almost anything gives away, where the tooth is soft and we have difficulty in retaining anything at all. I think putting in an inlay is time wasted. Of necessity in inserting these inlays or crowns we must use cement that is so thin it hardly has any character to it at all. Under such circumstances as that my observation is that it is not worth putting in.

Doctor Haas:—I had the pleasure of witnessing one of Doctor Tileston's inlays in a molar that was dead and black, with an old amalgam filling in it. This old filling was most beautifully replaced with a gold inlay. The occlusion of the tooth was so perfect the inlay seemed to burnish down to the tooth substance. There is such an infinitestimal amount of cement used that it is of small consideration. If you make a good joint the fracture will occur in some other place than in the cement. In years to come I think we will regard inlays very differently from the way we regard them now. I think there will be a stability and lasting quality about them that will be recognized. The idea that cement is a poor substance is not true. Like Doctor Jameson, I think it is a different substance when used under pressure. The texture and strength is altogether different. If cement is forced down under pressure we get an adhesiveness and a condensation there that is different from the cement we mix in our fingers and place in the tooth.

Doctor McCurdy:—I have not had any experience along this line of gold inlays to speak of. I have put in some porcelain inlays, and the majority of them stayed in.

Doctor Tileston:—I am very much gratified at the reception of my modest paper in the discussion which it has aroused. Doctor Perry spoke of the inlay being used in cases where a gold crown might be better in some hands. The inlay, as I make it, does not appear to be hard to make. It seems to me that anybody could make it with as great ease as I do. Julian Hawthorn says the things we do best are the things that come

naturally to us. It seems to me it is a very easy thing to make an inlay in almost any case that presents, however badly it may be broken down, short of total annihilation of the tooth. Gold crowns, as a rule, are not what you think they are. If you could get down under the edge of some of your gold crowns you would be disgusted with some of the work you thought so satisfactory.

Doctor Perry spoke of the character of the gold employed. I use the pure gold, and pure gold always works the same. The difficulty is that you do not always get it pure. The way I get it pure is to take out all the fillings that come to me from other operators. I never fail to do that and I always get pure gold and roll it out into plate. I find it works entirely to my satisfaction.

Doctor Perry also spoke of the solder showing at the joint. I don't use any solder on the outside of the inlay at all. I use 22-carat gold, which is scarcely distinguishable in color from the 24 carat. I never use anything else as solder for margins. It really doesn't make much difference if a little 18-carat solder is used in the back of the mouth. You must remember that these inlays are put practically out of sight. Anything that is so far forward in the mouth that it will show I prefer to make with the porcelain for esthetic reasons. I do not think they are as strong but they appear better.

Now, the idea I suggested of leaving a good thick jacket of metal on a porcelain inlay in the back of the mouth will enable you to put in a porcelain inlay which will be almost as strong as gold. Then the gauge of the gold should be, as Doctor Tuller says, 32 to 36. The thinner the gold the easier it will work. Thirty-six is not so thin but that you can work it with perfect success. With 32 you would be no safer, but you would have more trouble in burnishing that into the cavity.

I don't believe in rapid operations. There are some operations that are devised for emergencies, but if you want to do good work you must take time for it.

I don't depend upon cement for retaining the inlay in place. I make an inlay that will stay in place without any cement, as far as the stress which normally falls upon it is concerned. You can lift it out, but you cannot push it out. I make it in the form of a step or dovetail. When it is set in you can push it with all the force you care to, or that would be likely to fall upon them, but you cannot push them out. The cement is not expected to hold the inlay in there, and that is not the weak point, Doctor Hunt. If you are going to slap a gold inlay upon one side of a tooth, and expect the cement to hold it there, you would have the kind you probably thought of. In order to exclude the fluids of the mouth and hold the inlay against the lifting force the cement is used.

The exposure of the cement to solution was spoken of. In this inlay I have described, an overlap is provided which protects the cement from exposure at all. You cannot see any cement at all if the inlay is well made. Sometimes you may make a mistake in this overlap, but if your matrix is made as it should be there will be no cement exposed.

I shall not make any comparisons between this mode and others. Doc-

tor Tuller probably accomplishes as good results with his methods as I do with mine. I think his success, however, is due to his skill. Very few persons, it seems to me, could carry out the suggestions he made, but I think any one can make a gold inlay by the method I advocate.

DISCUSSION ON DR. STINE'S PAPER, "A METHOD OF FILLING PULP CANALS."

DR. R. B. WHITE:—I don't see how any one can criticise this method of filling pulp canals.

DOCTOR HUNT:—I can commend the essayist's method of filling root canals, because I have two teeth in my own mouth that were filled by his method and by him. In one of the two teeth there was quite a bit of pericementitis for a few hours, but, with the usual cheerfulness we all display in such cases, he assured me it would wear off soon. It is strange to me that we cannot systematize the method of filling root canals. I think we should have one method that could be proven to be a better method than other methods, and I cannot imagine a better method than Doctor Stine's when it is followed up with the expertness Doctor Stine is able to put behind it.

DOCTOR HINSHAW:—I wish to add my endorsement to that method of filling root canals. I have used it in my practice. Doctor Stine mentions the use of gutta-percha cones in connection with this. I have made a practice of using the gutta-percha cones. It seems to carry the medicament better.

DOCTOR PAGIN:—I have used this method for some time, and in many cases I think it is the best method. I am one of those, however, who believe that if we can get out all of the pulp, get the canal absolutely clean, we will have better success. I prefer to use the gutta-percha cones. Creosote is wonderfully preservative.

DR. STINE:—I am like Doctor Pagin, I believe in many cases it makes very little difference what the canals are filled with. If you clean out a canal to the apex it does not matter what the canal is filled with, so that it is a solid material. There are canals, however, that you cannot be certain about, no matter how hard you work. However, providing there are particles of pulp left in the canal we have in this material a mummifying material, the tannic acid, and a preservative material, the creosote. I believe in cleaning the canals out as well as possible. Then filling with this method will produce the best results. I did not mention the filling of abscessed teeth by this method, but there is, I believe, absolutely no better method of

TREATING OF CHRONIC ABSCESSES

fistulous opening or blind abscesses. The usual method of treatment is to clean out the canal well. Be sure there is an opening and in filling follow

in the filling until slight cauterization can be observed on the gums. The particles of oxid of zinc that are forced through will exude to the gum in a short time, and they keep the tract open in doing so, and cause it to heal from within outward. I have never had a failure by this method, and I have never known of recurrence where it has been filled with this material. In blind abscesses I have had satisfactory results. In the first case I ever used this treatment in my own practice, I used it on a chronic abscess that had been running for three years. That was four years ago. It had been filled repeatedly, and the filling always had to be taken out in a short time. It had been treated by a very competent dentist, and had been filled by different methods. I treated it two or three times with the creosote and put in a temporary filling for a few days. Then I filled it with this material and let it go for two or three weeks, when I found it to be perfectly healthy. I then crowned the tooth, and it has continued healthy. I have treated a number of obstinate cases, and they have always been successful.

SUGGESTIONS

HOW TO DRY SMALL INSTRUMENTS.

After using some of the more complicated instruments which it may be impossible to dry very thoroughly after they are washed, they may be dipped in alcohol, which will absorb the remaining water, or they may be placed in an oven for a few minutes. The latter method is probably the better of the two.—*Internat. Journ. of Surgery.*

UNDERCUTTING THE INLAY.

Jos. Head, Philadelphia.

I must say that Dr. Reeves's interpretation of the physical law of adhesion does not seem to me so conclusive as to make me give up undercutting the inlay and undercutting slightly the cavity walls. The adhesion of the cement is a great source of strength in supporting the porcelain as well as the tooth-structure, but slight undercuts can do no harm and may do a great deal of good.—*International.*

METHOD OF TAKING IMPRESSIONS FOR BRIDGE-WORK.

J. G. Pease, New York.

After the teeth are ground and space is made for the caps, take pieces of wood and whittle them down flat to fit the inter-dental space, having them project a little above the crown on each side, and take an impression in plaster. The wood will come out in the plaster and will show the lines, enabling you to get an accurate fit in a very few minutes by pouring fusible metal.—*Cosmos.*

INLAY SUGGESTIONS.

W. T. Reeves, Chicago.

Before stripping the platinum from the inlay, try into the cavity to see if you have the contour perfect, also to judge of the occlusion as near as you can by observation. You cannot have the patient close upon the inlay, because previous to its being set it would be easy to fracture the porcelain. After the cement is completely crystallized a thin porcelain filling in the occlusal surfaces of molars will have the full strength of the whole tooth to resist masticating stress and is in no danger of fracture.

If the contour is lacking, build on more body; if too full, grind and change as desired, and return to the furnace to be glazed again.—*Extract International.*

HIGH-FUSING VS. LOW-FUSING BODIES FOR INLAY-WORK.

Dr. Gaylord.

I feel that in inlay-work there is a place for both methods. I commenced to work with the high-fusing body, and have done work with it which I considered satisfactory. I have also done work with the low-fusing which I think is satisfactory. There are places where I would prefer one and consider the other inferior, and *vice versa.* I do feel that closer adaptation is possible with the gold matrix than is possible with the platinum matrix. I have tested the gauges of No. 30 gold and 1-1000 platinum, and find the former to register 6-10000 of an inch on the micrometer, while the so-called 1-1000 registered 16-10000, a difference between their gauges of 1-1000 of an inch. This may explain the better adaptation obtainable with the gold matrix. I think I can do better work, get closer adaptation, better color, and generally better results with the low-fusing body. It takes more time, but this should not be a matter for consideration. It is the result and not the time saved we should consider.—*International.*

TWO METHODS OF REPAIRING A CROWN.

W. Mitchell, London, Eng.

One is by trephining around the broken pin (when you cannot get it out of the root), putting a tube round this pin, fitting the crown on this tube, removing tube and crown for soldering together, and finally cementing into position on the root. The other method is by sawing two slots into the backing as far as the pins, from where the porcelain has broken away, then fitting down a tooth, and burnishing over the entire backing and edge of porcelain a thin piece of gold, with two holes punched in to receive the ends of the pins, which are then soldered and cemented, making practically a box crown.—*Jour. B. D. A.*

A GLAZED SURFACE BEST FOR INLAYS.

W. T. Reeves, Chicago.

I have always contended that an inlay should never be ground on any surface other than the occlusal surface in molars and bicuspids and on the cutting edge in the anterior teeth. It is the practice of a good many inlay workers, after setting an inlay, to grind the surface to make it level with the plane of the tooth, and they thus lose a large per cent. of the quality of immunity.

This is necessitated by the use of low-fusing bodies, which have a tendency to assume a spheroidal form in fusing, and in high-fusing bodies by over-building or over-contouring. All necessary grinding should be done before the matrix is removed and the inlay again glazed. This glazed surface is a protection to surrounding and approximating tooth-surfaces, and brings immunity to a greater extent than any other material or agent we use. The tooth that has for approximate contact point the glazed surface of porcelain is better protected by sixty per cent. from liability to decay than when both contact points are natural tooth-structure, while the tooth that has gold or other filling-materials for contact point is more endangered by twenty per cent. than in the original condition. —*Extract International.*

ADVANTAGE OF GUTTA-PERCHA AS A CROWN-SETTING MATERIAL.

Dr. Brown.

If you get too much cement and it sets with your crown not in place, you have to let it go or practically destroy it in order to get it off. If you have it partly on with gutta-percha and it does not quite fit, pull it right off while it is still soft, then you have a perfect impression of the inside of the root and the border of it, and with a very little surplus taken away it can be reheated and put on the same way. In that way it is possible to set any bridge or crown that you may desire to set absolutely perfect. The term "absolutely perfect" is used in a reasonable sense, meaning that there is certainly no better method of approaching perfection.—*Extract Cosmos.*

ANCHORAGE OF INLAYS INVOLVING INCISAL EDGES.

Dr. Hornberger, New York.

There are some cavities involving the incisal edge which I believe must have some retention in the way of pins. I do not think large fillings involving the incisal edge will remain in for any length of time without them. I have adopted the following method: With a small bur I drill a pit in the cervical wall of the cavity parallel with the pulp, and then make another at a point near the cutting edge and parallel with it. Platinum wire No. 24 is given a right-angle bend and fitted to the two holes in such a manner as to leave a platinum loop slightly above the pulpal wall of the cavity. I then put cement into the pits and force this wire into it and bring the cement up under the loop so as not to have any undercuts. After that is finished I make the matrix and bake the inlay. I then use the carborundum stone to undercut the groove corresponding to the loop. I then remove the cement from beneath the loop and cement the inlay to place. The cement crystallizes around the loop and retains itself in the cavity of the porcelain inlay and cannot be pulled out.—*International.*

USE OF GUTTA-PERCHA.

Dr. Brown.

You have to depend upon a lubricant in using gutta-percha, especially when you put it over the surfaces of the teeth, in capping crowns, and work of that kind. I use eucalyptus and I apply it freely. After having dried the surface of the tooth to be crowned, get the root dry, put eucalyptus on cotton, and flood it all over. Then, when I am using gutta-percha to put on the bridge-work, or a series of bands, where I have a considerable number together, I use a thick solution of chloro-percha at the gingival borders, but not around the crown. I want it so that it will press in there to make up any little deficiencies. No matter how carefully you handle it, it may draw away contrary to your wishes, but if you have that, it simply dissolves the gutta-percha a little and this takes up the surplus solution that is there, and you have the best cement you can possibly have around the gingival border.—*Cosmos.*

BURNISHING OF THE MATRIX.

Jos. Head, Philadelphia.

The plan that Dr. Reeves uses, of burnishing his matrix three separate times before it is finished, would in my hands not give such perfect edges as a single burnish. The platinum so treated by me would be apt to act like an overswaged plate, the edges rising up from the center. When I burnish the ordinary matrix into place, the metal should never budge from the cavity walls until it has been spun into place from the margins to the bottom of the cavity; however, this is a mere matter of detail. Some gentlemen can work better by taking an impression of the cavity and swaging the matrix with the die and counter-die. Others have the double burnish, the second one being given after a portion of the porcelain has been baked in the matrix. Dr. Reeves uses three separate burnishings, which necessitates three separate annealings of the platinum.—*International.*

A GOOD WAY TO REMOVE INLAY MATRIX WITHOUT BENDING.

F. W. Harnden, San Francisco.

A good way to remove a matrix from a tooth cavity is to tie a knot in the end of a thread and lay it in the bottom of the matrix, then cover it with warm wax, which may be pressed perfectly to the cavity walls. When chilled, the matrix may be handled with ease.

THE POST AND PLATE CROWN.

A. S. Wolff, St. Louis.

The tooth to be crowned is treated in the usual manner and the root filled for permanent operation. The crown is then excised, and the root beveled equally toward the lingual and labial surfaces, slightly under the gingival margin all around, so that were we to look at it from the side it would present an outline similar to the letter V, though of course, with a very considerably moderate angle. A piece of pure gold, anywhere from 32 to 36 gauge, is next taken, carefully annealed and burnished on the root, trimmed and reburnished until it fits accurately. Personally I prefer about 36-gauge, as I find there is less springiness, and perfect adaptation is obtained more quickly and with less manipulation. The root must next be reamed and a post adjusted. Then punch a hole through plate, insert post, draw off and solder, using as little solder as possible; replace on the root and once more burnish, in order to make sure of adaptation. A plate tooth is now selected and may be ground to fit, trying on the plate in the mouth; or the post and plate may be drawn off in a plaster impression and the work finished on the model made from the latter. I prefer the latter method, for the reason that there is less liability of the post and plate becoming displaced. In backing the porcelain facing, let backing extend clear over the shoulder, so that when soldering a perfect joint between the porcelain and post and plate is assured. After grinding facing, back, wax, invest and solder; polishing completes the crown.—*Extract Dental Era.*

TO OVERCOME SHRINKAGE IN BAKING PORCELAIN INLAY.

F. W. Harnden, San Francisco.

In porcelain inlay work, to overcome the shrinkage of the first bake from the edges toward the center, make a small hole through the mass, just before baking, with a pin or needle. The mass will fuse in a ring shape. Have plenty of surplus in the matrix, whether of platinum or gold, and manage to get the corners of this surplus covered with the investing material. This prevents the matrix from changing shape.—*Gazette.*

THE CAUSE OF POROSITY IN BAKING PORCELAIN.

F. W. Harnden, San Francisco.

In porcelain work many failures have been due to overbaking. The first or foundation mass should be of a high-fusing body and merely biscuited. The finishing contour must be of a lower-fusing body and may be baked to the desired glaze. If the first mass is overdone the resulting porosity will give a crown that has no strength, and if any of the surface bubbles break they leave holes that are impossible to keep clean.

Many cases of porosity are caused not by imperfect baking of either body, but through the use of too much gold in soldering. In assembling the parts of a bridge or a crown, before the porcelain is added, better results will always be obtained by using platinum solder, leaving thereby only the tooth pins to be fastened with pure gold. The minutest quantity is all that is needed for this, and if after it is melted the heat is raised for afew moments the gold seems to disappear—really forming an alloy with the platinum instead of volatilizing later during the fusing of the porcelain and spoiling all. Never try to patch up porous porcelain. Begin over again. The strength of the bridge or crown depends on the platinum or iridio-platinum foundation, which must be so constructed that it will stand any stress put on the finished work, otherwise the porcelain will breay off because of the bending of its support.—*Gazette.*

EXTENSION OF CAVITY MARGINS IN INLAY-WORK.

E. T. Darby, Philadelphia.

Dr. Reeves says he does not extend his cavity margins, and that these surfaces are immune to decay because filled with porcelain. With this I cannot agree. I think that if the cavity is not properly cleaned decay will recur around the porcelain filling. I do not believe the cavity is immune because filled with porcelain. I should extend my margins well and should not object to labial extension if porcelain is used, because it is not unsightly. I would prefer to extend my margins to avoid recurrence of decay rather than to do as Dr. Reeves advocates. —*International.*

A METHOD OF PLACING PORCELAIN FACINGS IN GOLD BICUSPID CROWNS.

F. L. Platt, San Francisco.

The buccal face of a soldered or seamless gold crown is cut out, leaving a sufficient band at the cervical border to insure strength and rigidity when the crown is finally cemented in place, and an ordinary cuspid facing is ground to approximately fit the opening. This facing is then backed up with thirty-two gauge pure gold, and should fit accurately, leaving a slight margin of the backing projecting all around the facing.

The facing and backing are then placed in position, a little pad of asbestos paper is placed over the facing to protect it from contact with the flame of the soldering lamp, and crown and facing are wired together with two or three turns of binding wire.

A little borax flux and small pieces of solder are then placed on the pins, which should be cut off short, and around the margins of the opening, and the whole crown may then be heated and soldered, without investment, over a Bunsen burner or alcohol lamp.

Enough solder should be used to stiffen the backing slightly and restore the contour of the crown so the facing will be flush with its buccal surface when finished.—*Gazette.*

BACKING RUBBER TEETH FOR CROWN AND BRIDGE-WORK.

J. P. Parker.

The Doctor uses No. 28 or No. 30 pure gold plate, which he cuts on the bias, using a piece a bit wider than the length of the tooth, and sufficiently long to encircle the tooth. A hole is then punched for one pin, the metal held in place by means of this and wrapped about the tooth; the surplus is then trimmed, leaving the labial or buccal surface exposed, as the case may be. The hole is then punched for the second pin, and the metal carefully fitted to the tooth and burnished into place. For the molars and bicuspids, where a heavy backing is desired, the surplus gold at the cervical portion of the tooth may be turned back and used as a matrix to hold the extra solder. —*Gazette.*

ROOT-FILLING MATERIAL.

C. E. Parkhurst, Somerville, Mass.

The root filling consists of pink gutta-percha, because of its color, which can be traced in drilling for a post, or in case of removal. This is dissolved in chloroform, cajeput-eucalyptus, with the addition of hydronaphtol, oil of cassia, and iodoform. This is always heated in a water-bath just previous to using, to render it of a creamy consistency. Peroxide is used first, then alcohol, and finally eucalyptol, after which the canal is dried with hot air. The root-filling is pumped into the canals with a smooth broach, not a barbed one with a shred of cotton on the end, as this acts too much like a piston and is too liable to force the chloro-percha through the apex. The eucalyptol left in the canal acts as a lubricant and helps the chloro-percha to follow to the apex. When reasonably sure that the canal is filled, a point of gutta-percha of the appropriate size is used carefully as a piston, and then left to furnish a hard center of the root-filling. These gutta-percha points, by the way, can be made very nicely by rolling out small pieces into long cones pointed at either end on a heated tile, and when cold cutting in the centre.—*International.*

TO PREVENT CORROSION OF SILVER PLATES.

Silver plates boiled in a solution of cream of tartar and salt will not corrode when placed in the mouth.—*Gazette.*

SHAPING CAVITIES FOR PORCELAIN INLAYS IN ANTERIOR TEETH.

H. C. Raymond, Detroit.

In approximal cavities in the anterior teeth, extending to the occlusal edge, the palatal wall is cut in excess of the labial, as the latter should aid in resisting the outward force exerted in mastication. In such a cavity, a broad base at the gingival aspect should be made, which is a seat for the filling. A form of seat must be made in all cavities, generally in the form of a triangle, which gives the filling a decided base to rest on, and also prevents it from slipping out of place when setting it. It is not retention, but simply a seat.—*Extract Register.*

REPLACING BROKEN FACING.

E. E. Cruzen, Baltimore, Md.

This method appliacable especially to bicuspids and molars is as follows:

From platinum plate, No. 35 gauge, he cut a piece the size of the tooth to be replaced; two holes were punched in this to correspond with the position of the pins on the bridge (pins of broken facings not removed); then on a broach the same size as pins of the tooth a piece of platinum foil, slightly wider than the length of the pins, was rolled; one of these little tubes was then slipped over each pin and the backing was placed in position over the tubes and burnished to place. The ends of the tubes were closed by simply mashing them down on the ends of the pins; the backing and tubes were removed together, and the tubes soldered to place with minute pieces of 24-k. gold. This formed the foundation upon which porcelain was built to the shape desired, after which it was cemented to place.

PULP-CAPPING MATERIAL.

C. E. Parkhurst, Somerville, Mass.

This capping is used in cases where the cavity is near the pulp, but not an exposure. It is a precautionary or decay-restraining step, if such is possible. The capping consists of jodoformagen and iodoform powder, equal parts, mixed with oil of cloves as the liquid. Some of this powder and liquid is placed upon a tile, a small thin spatula heated over the burner, the mixture made and applied to the floor of the cavity with a small piece of cotton held in pliers. It will harden quickly with hot air. In case the floor of the cavity is thin, a coating of cement should be flowed over before regular filling.—*Extract International.*

ADVANTAGES OF THE USE OF THE RUBBER DAM IN FILLING CHILDREN'S TEETH.

R. Ottolengui, New York.

Deciduous teeth are not nearly so sensitive when the rubber dam is used. They need only to be kept dry to be handled. Those cases with approximal decay are exactly the ones where the most comfort to the patient is secured by the rubber dam, because it covers over that little inflamed septum of gum that lies between, and it is the touching of that that hurts the child a great deal more than the actual touching of the exposed pulp. If you have that gum pushed down by the rubber dam, out of the way, and have the cavity clearly exposed, and put the instruments just where you want them, so far from ridiculing the use of the rubber dam, you will thank your stars you have heard of it in connection with children's teeth.—*Extract Items.*

SOCIETY

MICHIGAN STATE BOARD OF DENTAL EXAMINERS.

The State Board of Dental Examiners will meet in Grand Rapids, Mich., for examining of candidates for license, on May 10, 1904. For particulars address,

DR. W. C. MCKINNEY,
Secretary.

Saginaw, Mich.

VERMONT STATE DENTAL SOCIETY.

The twenty-eighth annual meeting of the Vermont State Dental Society will be held at Hotel Pavilion, Montpelier, March 16, 17, and 18, 1904.

We anticipate a pleasant as well as a profitable meeting, and a cordial invitation is extended to all.

THOMAS MOUND,
Secretary.

Rutland, Vt.

CALIFORNIA STATE DENTAL ASSOCIATION.

The California State Dental Association and the Alumni Association Dental Department, University of California, will meet jointly in annual session May 16-19, 1904, in San Francisco.

Eastern specialists on porcelain and orthodontia have been invited to give a course of instruction in their subjects at this session, and efforts are being made to eclipse all previous sessions from standpoint of progress and interest to the profession.

GUY S. MILLBERRY,
Secretary Joint Committee.

AFTERMATH

PERSONAL AND MISCELLANY.

Fire.—By fire at Zanesville, Ohio, December 31st, the Carey dental parlors were totally consumed.

Married.—Dr. C. J. Whittaker, Pendleton, Ore., was married December 31st, to Miss Glenada Griffiths, Portland.

Dr. J. Foster Flagg Dead.—Doctor Flagg, well known throughout the dental world, died at his home in Swarthmore, Pa., aged seventy-five years.

Dental Office Thieves.—The dental office of Dr. G. A. Gibson, Carthage, Mo., was robbed of $35 worth of gold and supplies, December 29th.

Dental Library for Sale.—The valuable library of the late Dr. Jonathan Taft is for sale. Those interested should address Dr. N. S. Hoff, Ann Arbor, Mich.

Reorganized.—The Seattle Dental Club has been reorganized and now holds regular meetings once a month. C. A. Custer is president and A. B. Palmer, secretary.

Dr. D. M. Cattell Convalescing.—Friends of Dr. D. M. Cattell, who recently moved from Chicago to Nashville, Tenn., and who has been seriously ill of typhoid fever, will be pleased to learn that he is convalescing.

Removed False Teeth from a Man's Stomach.—In January, Dr. Roswell Park, Buffalo, N. Y., successfully removed a set of teeth that had been swallowed by Mr. F. C. Smith in a fit of coughing. The X-ray was used to locate the plate, then the stomach was cut open and the teeth removed.

Fraternal Dental Society.—The Fraternal Dental Society of St. Louis elected officers as follows: Dr. E. E. Haverstick, president; W. E. Brown, vice-president; E. P. Dameron, secretary; J. A. Todd, corresponding secretary; S. T. Bassett, treasurer; B. L. Thorpe, W. L. Whipple and G. A. Matthar, executive committee.

Southern Illinois Dental Association Officers Are: J. K. Conroy, president, Belleville; W. G. Carney, vice-president, East St. Louis; H. K. Harnet, secretary, Upper Alton; C. E. Byington, treasurer, Harrisburg; executive committee, E. L. Burroughs, Edwardsville; L. K. Kraft, Collinsville; G. W. Entsminger, Carondelet.

Ancient Dentistry. Recent excavations in Rome show that dentistry was practiced many centuries ago. On the Via Rosella, which existed at the time of the old Roman republic, a cave has been opened up which disclosed a number of graves set in niches. One skeleton of a woman was found with a perfectly modeled set of gold teeth.

Natural Born Dentist. "Dr. T. H. Bell, Natural Born Dentist," appears on the cards of a Providence, R. I., dentist, undernath a halftone picture of himself. On the reverse side of the card is pictured a set of teeth with diamond settings, etc., and a statement that "his system of dentistry teaches the world." A "natural born dentist" and yet he has to advertise to get patronage. Consistency, thou are a jewel.

Suicides.—Dr. E. C. Swain, Cleveland, Ohio, committed suicide by attaching a rubber tube to a gas jet and placing the other end in his nostril. Ill health the supposed cause. Dr. Monroe Leech, Liberty, Ind., shot and killed himself, January 5th. R. T. Sheppard, a dental student in Northwestern Dental School, committed suicide in a Chicago hotel. Failure to succeed as a student and financial troubles, supposed cause.

Dentistry Among the Romans.—There is plentiful evidence of skilled dentistry among the Romans, for many of the Latin authors have references to false teeth. In the "Roman Laws of the Twelve Tables" there are distinct references to artificial teeth. The first part of No. 10 forbids useless expense at funerals in general, but an exception is permitted by No. 11, which allows that the gold fillings of false teeth or the gold with which they were bound should be buried or burned with the deceased.

Exoneration.—I see by the January number of The Dental Summary an article stating that the dentists of Dowagiac had gone to advertising, contrary to the laws of the Michigan Dental Association, etc. I wish to inform you that in part this is true, but your humble servant is still an ethical practitioner. I not only refused to join my fellow practitioners in their advertising but did all in my power to prevent the others from so doing. Please correct the statement, that I may be placed in the right light before the profession at large.

Truly yours, F. H. ESSIG.

New Haven Dental Association.—At the annual meeting of the New Haven Dental Association, held December 8th in New Haven, the following officers were elected: President, Dr. F. W. Brown; vice-president, Dr. E. S. Gaylord; secretary, Dr. E. Frank Cory; treasurer, Dr. H. H. Spenig; executive committee, Dr. J. Tenney Barker (chairman), Dr. A. F. Slater, Dr. F. C. Parsons; finance committee,

Dr. E. S. Thompson (chairman), Dr. H. S. Nichols, Dr. G. E. Nettleton. The New Haven Dental Association will hold a cenvention in New Haven during March.

Institute of Dental Pedagogics.—The following officers were elected at the recent meeting in Buffalo: President, Dr. H. B. Tileston, Louisville, Ky.; vice-president, Dr. W. H. Whitslar, Cleveland, Ohio; secretary-treasurer, Dr. W. E. Willmott, Toronto, Can.; executive board, Dr. L. P. Bethel, Columbus, Ohio, to serve three years; Dr. J. A. Sherwood, Buffalo, N. Y., was appointed master of exhibits; Drs. W. G. Foster, Baltimore; J. Q Byram, Indianapolis, and N. T. Yager, Louisville, were appointed a committee on new appliances, books and charts. Publication committee, Drs. Goslee, Willmott and Hillyer.

Getting His Teeth Sharpened.—When the new boarder arrived dinner was ready to be served, and the hostess, wishing to give him time to arrange his toilet, courteously delayed the repast a few minutes. As he did not put in an appearance promptly after the ringing of the second bell, and as the old boarders had assembled at table, the boarding mistress sent Bridget, a recent importation from the Emerald Isle, to tell him that dinner was ready. When the waitress knocked the new boarder was unpacking his valise. Responding to a second knock, he stood at the door holding a set of false teeth in one hand and a nail file in the other and said: "Yes, I'll be down in a minute." The domestic stared at him in amazement, and returning to the dining room, announced sharply: "He'll be down, ma'am, as soon as he sharpens his teeth."—New York Press.

Dentists Identify the Dead.—Dentists identified a number of bodies burned beyond recognition in the Iroquois theatre fire. Among them were the bodies of Mrs. William M. Reed, Waukegan, Wis., identified by Dr. C. H. Albright, Waukegan; Mrs. Mary A. Strawbridge, Chicago, identified by Dr. G. M. Hammon, Chicago; Mrs. Elizabeth Duvol, Zanesville, O., identified by a Chicago dentist who had filled and crowned her teeth; Mrs. Dixon, Chicago, identified by their family dentist.

In Sioux City, Iowa, January 2nd, Dr. D. A. Collinson received by express a package containing the jaw of a man. When a letter arrived later it explained that the jaw was from a man who had been found murdered in the Oregon woods. There was uncertainty about the identification, although the man was supposed to be H. W. Iddings, an old friend of Collinson. Collinson was asked if he could identify the dental work, having recently done some for Iddings. Collinson easily identified the fillings as those he had put in Iddings' mouth a few weeks before he went West. Iddings lived in Wisconsin.

These cases but emphasize the necessity of keeping a record of operations performed by every dentist.

Dr. Barrett's Bequests. Doctor Barrett left an estate consisting of $6,000 in realty and $10,000 in personal property. Among the provisions found in his will were the following: "All my books, drawings,

specimens and other articles which have as their chief value a professional or scientific interest, I desire given to the Dental Department of the University of Buffalo, the school which I think I was chiefly instrumental in founding, providing the governing faculty shall prepare and put in place suitable cases or receptacles for their permanent preservation, and shall properly care for them. I desire that my operating-chairs, cases, tools and all my professional instruments shall be given to said Department, provided they have not been disposed of previously, to be by the faculty given to members of the graduating class or classes, either as prizes for good deportment, or to poor but deserving students." Doctor Barrett then directed that his Etruscan relics and curiosities, including the collection of guns and weapons, be given to the Buffalo Historical Society. He further provides that after his wife's death, the unexpended portion of the estate shall be given to the council of the University of Buffalo in trust to be used for the benefit of students. He desires that "sufficient of it to produce an annual sum of $100, to be known as 'The Barrett Prize,' to be awarded annually to the member of the graduating class whose general average in the examination of all his studies, including deportment, shall be highest."

Resolutions on the Death of Dr. J. Taft.—The following action was taken by the Odontological Society of Cincinnati:

The members of the Cincinnati Odontological Society wish to record their regret and sorrow at the death of Dr. J. Taft, a charter member of this organization. Up to the time of his removal to Michigan he was very regular in his attendance upon the monthly meetings of the society and always took an active part in the proceedings.

His frequent communications to the society, as well as his discussions of the subjects brought before the body, were notable both for scientific and practical qualities. Doctor Taft's long and varied experience as a foremost practitioner of dentistry, coupled with his ability as a speaker, made him a most desirable member of any society of dentists, and the members of the Odontological have always felt they were being helped and educated when he was present and took part.

Dr. Taft was also an example to all the members because of the high professional standard which he set before them, and which he himself always strived to practice.

The members of the Odontological Society wish to convey to Mrs. Taft, his daughter, Mrs. A. T. Edwards, and his sons, Drs. William and Alfonso Taft, expressions of sympathy in their sorrow and bereavement.

(Signed.) H. A. Smith,
M. H. Fletcher,
J. R. Callahan,
Committee.

Fake Advertisements.—We present herewith about the best "take off" on fake advertisements that we have seen. No name appears on the printed circular, but the author is said to be Dr. W. B. Miller, Altoona, Pa.:

TEETH TEETH TEETH

NEW YORK and CHICAGO
LIMITED
Dental Association !

The TWENTIETH CENTURY Dentists have organized the above association for the **"LIMITED EXPRESS"** purpose of catering to the wants and dental requirements of all individuals who don't give a rubber dam how dental work is done, or by whom; just so the price is inconsistent with good material and skillful service. The Manager in Charge, Engineer, Conductor and Brakeman are all fullfledged graduates of the most renowned Dental Colleges of the Old and New World (the Philippine Islands included) and are the only lineal descendants in the direct "Mail" line of such eminent scientists as "Herodotus," 484 B. C., and others—from which time through all the dim vista of past generations, our Association and identity have been kept intact. From the ruins of Pompeii and the Pyramids of Egypt relics of our ancestral skill and ingenuity have, from time to time, been recovered, which, from a historical standpoint, establish beyond contradiction our rights and claims to Professional Antiquity. Our superiority thus established over the more recent and modern productions of latter day teachings enable us to DO YOU a greater service for less real cash, which we extract, by your paying, without pain, Free of Charge. "Dental Catorphoresis" an unsuccessful and abandoned experiment, has by us been supplanted by Hypnotic Power and INFLUENCE which enables us to perform all operations not only painlessly, but without your personal, mental or physical knowledge. The horror of the Dental chair is but as a dream.

Being the original and sole owners of large Gold Mines in the Klondike Region and also a Silver Mine in Nevada, enables us to PRODUCE work requiring such materials below ACTUAL COST and the absolute purity of the metals is fully guaranteed by a U. S. Mint Assayist, and because of such advantage of our competitors,

who make what are commonly known as "Hollow or Shell Crowns," ours are absolutely solid, cast in moulds from the original ingot metal. In addition to Gold Crowns and Bridge-work we are prepared to introduce the very latest Spring Style (direct from Paris) of Window Crowns, including Bay Window Crowns, the Oval, Square or Octagon Style, with Beveled Edge French Plate or American Glass Fronts, as preferred by the patient.

(over)

In order to avoid the rush incident to such unprecedented demand made upon our valuable time, we take all impressions of the mouth in infancy prior to the eruption of the first set or deciduous teeth, models of which are made and stored away in large and commodious vaults provided for the purpose. Being thus prepared years in advance the patient is not required to call for a second impression, but can order TEETH by mail, phone or wire, and to avoid additional delay we have purchased the very latest thing out in the form of an "Automobile Delivery Wagon" with a guaranteed speed of 150 miles per hour. The various well known impression materials, Plaster, Impression Compound and Wax, have been abandoned and impressions are taken only with the original clay or mud, imported direct by us from the garden of Eden. None genuine without the signature of Adam and Eve being accepted, this precaution being taken to prevent adulteration or substitution of worthless material.

ARTIFICIAL TEETH

Are guaranteed to approximate more closely the natural organs than those used by any other Dentist, as immediately after the battle of San Juan, Santiago, and the destruction of the Spanish fleet our representatives were upon the scene and procured all of the available teeth to be found in the mouths of dead Spaniards, and to those contemplating going abroad this will prove a decided advantage, inasmuch as Spanish and other foreign languages can be spoken most fluently. When preferred all our teeth will be furnished with the latest improved Morgan & Wright Rubber Tires or Rims with single or double tubing, fully inflated, thus enabling the patient to talk continuously without danger of LOSING WIND or becoming deflated—a decided advantage to step mothers, old maids or widows. Because of the fact that guarantees for a limited number of years are rendered void in the event of the Manager going to ——— —, we have decided to guarantee all operations and work from the birth of Adam to Eternity. Beyond this our future address may be obtained from "St. Peter at the Gate."

Don't Fail to Come to Our Grand Opening.

Spanish, Filipino and the Chinese Languages spoken, with a large retinue of Chinese servants and a French Butler in constant attend-

ance. **ICE CREAM and CAKE** will be served by them FREE OF CHARGE daily from 9 a. m. to 9 p. m. To those more bibulously inclined "Mum's Extra Dry" will be served free by the French Butler, in addition to an elaborate menu of Limberger Cheese, Spanish Pickled Mackerel and Holland Herring.

Babies will be Vaccinated FREE on BARGAIN DAYS!

And a competent guide furnished free to conduct all Out-of-Town patrons through Altoona's new U. S. Federal or Public Building.

Be on the lookout for notice of "Mill End Sale" of Job Lots of Teeth, Fillings, etc.

For the sole accommodation of those who are ashamed to be seen visiting our establishment in daylight, we have decided to keep open evenings from 6 to 10 o'clock.

A pair of verdant farmers, who had just disposed of their products at the City Market a few days since and whose pockets were somewhat inflated by the ready cash thus obtained were overheard discussing the probabilities of the future, whereupon the most youthful of the two, with a liberal litter of HAYSEED, fresh from the rural district, still clinging to his anatomy, being impressed with the future possibilities of the environments of a city life immediately decided to invest his cash on hand in a Dental Outfit and to establish one of those new fangled ASSOCIATIONS, as a most promising field for remuneration and the development of his latent powers, and, tearfully bidding adieu to the companion of his youth, he immediately launched his bark upon the sea of professional life as Dr. Perkins, of Pumpkinville, Manager in Charge.

This Advertisement is All a Fake!

Who of you that have perused it ever saw or read an advertisement in print by such eminent professional gentlemen of the Medical profession as Pancoast, Agnew, Garretson or Pepper, or of the Dental as Atkinson, Kingsley, Kingsbury, Webb, Darby, Jack or Pierce and others? Nay; not one! Professional men of learning, recognized ability and talent are not obliged to resort to advertising schemes to secure patronage. His services are sought and ability recognized by the educated and refined element, who are always prepared and willing to compensate him for what he really is and not what he pretends to be.

"YOU CANNOT MAKE A SILK PURSE OUT OF A SOW'S EAR."

TEETH TEETH TEETH

Form of Interchange Agreement of New Jersey State Board of Dental Examiners.—Agreement entered into this.....day of ....., 190.., between the State Board of Registration and Examination in Dentistry of New Jersey, Members of the National Association of Dental Examiners, and the State Board of Examiners of the State of....., also members of the same body.

Witnesseth, The party of the first part hereby agrees under the terms of the resolution passed at Asheville, to exchange with the State Board of Examiners representing the State of..... licenses to practice dentistry, and to issue license to the candidate presenting credentials properly filled out, accompanied with fee such as the laws of each State require.

In witness thereof the president and secretary have signed their respective names and seals in duplicate.

ASHEVILLE RESOLUTION.

"Resolved, That an interchange of license to practise dentistry be, and is hereby recommended to be, granted by the various State Boards, on the following specific conditions:

"Any dentist who has been in legal practice for five years or more, and is a reputable dentist of good moral character, and who is desirous of making a change of residence into another State, may apply to the Examining Board of the State in which he resides for a new certificate, which shall attest to his moral character and professional attainments, and said certificate, if granted, shall be deposited with the Examining Board of the State in which he proposes to reside, and the said Board, in exchange thereof, may grant him a license to practice dentistry."

.....

President State Board of.....[Seal.]

.....

Secretary State Board of.....[Seal.]

Patents Recently Granted of Interest to Dentists.—

744,292—Anchored denture, Cassius M. Carr, Colorado Springs, Colorado.

744,291—Anchored denture, Cassius M. Carr, Washington, D. C.

744,204—Dental lip and cheek supporter, James B. Jordan, Nashville, Tenn.

744,358—Dentimeter, Charles T. Kinsman, Cambridge, Mass.

745,070—Instrument for holding artificial teeth, William F. McKibben, Linneus, Mo.

745,071—Instrument for holding artificial teeth, William F. McKibben, Linneus, Mo.

745,722—Dental tool, Chester M. Freeman, Baltimore, Md.

745,615—Making dental dies, Clarence A. Holmes, Seattle, Wash.

746,462—Toothpick machine, Henry P. Churchill and I. J. Keene, Portland, Me.

Copies of the above patents may be obtained for ten cents each by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

DENTAL COLLEGE TEACHER'S CONTRIBUTIONS

LIMITATION OF EXTENSION FOR PREVENTION.

BY G. V. BLACK, M. D., D. D. S., SC. D., L.L. D., CHICAGO, ILLINOIS.

Professor of Operative Dentistry, Pathology and Bacteriology, Northwestern University Dental School, Chicago, Ill.

The forms of the areas of liability to decay are different in the molars and bicuspids from the forms presented in the incisors and cuspids, because of the differences in the forms of proximal surfaces of these teeth, but the essential character of the areas are the same in all, so that they are really much alike. The area of liability to decay upon the proximal surfaces of all of the teeth is to the gingival of the contact point. In the bicuspids and molars its occlusal border line passes through, or just gingival of, the contact point horizontally and reaches slightly out into the buccal and lingual embrasures. It then rounds to the gingival. The buccal border line passes diagonally to the buccal and gingival to the free border of the gum, and the lingual border line passes diagonally to the lingual and gingival to the free border of the gum. The gingival border line follows the free border of the gum from buccal to lingual, inclosing the area. In the incisors and cuspids the form of the area of liability is different, because of the triangular form of their proximal surfaces. Toward the incisal it forms a somewhat rounded angle at the contact point and stretches away to the buccal and lingual and gingival along the opening of the embrasures to the free border of the gum, and is bounded to the gingival by the position of the free border of the gum, enclosing a triangular space. This area inclosed by these lines is the proximal area of liability to decay. The area of tooth surface just outside of these boundary lines, or along the angles of the teeth, is immune to decay in all persons who are making

free use of their teeth in mastication. We rarely see decay beginning upon the mesio-buccal or disto-buccal angles of the teeth, and it almost never occurs upon the corresponding lingual angles. The reason is that in the mastication of food it is forced through the embrasures in such a manner as to sweep these angles clean. It is for this reason that they are immune. When I speak of immune areas of the surfaces of teeth it must be understood that the immunity meant is due to position entirely. The tissue of the tooth upon these areas would be just as liable to attack as that of the areas of liability if their relative positions were changed.

Stated in shorter terms: The proximal area of liability to decay is bounded to the occlusal by the proximal contact point, to the buccal or labial and lingual by the opening of the embrasures to the excursions of food during mastication, and to the gingival by the position of the margin of the healthy gum septum.

This requires that the operator make a study of each individual proximal surface involved in decay, determine the boundaries of its area of liability to decay, and that in the preparation of the cavity the whole of the area of liability be included within the cavity outline, together with such area of the occlusal surface in bicuspids and molars as may be necessary to give convenience in operating and stability to the filling. If present decay only be removed, the cavity lines not being extended as described, decay will recur about the margins of the filling, causing failure. The provisions for maintaining the health of the gum septum should not be overlooked. Caries never makes a beginning on a portion of the tooth surface covered by a healthy gum septum or gum margin. All such portions are strictly immune. A margin of a filling so laid that it will be continuously protected by healthy gum tissue is as safe as if laid upon a surface fully exposed to the friction of mastication. Therefore the preservation of the health of the septum of the gum which normally fills the interproximal space to the contact point is one of the important factors in treatment. It follows, therefore, logically, that in the preparation of these cavities, they must, in order to be curative, be cut so far into the embrasures both to the buccal and to the lingual that the excursions of food in the act of mastication will sweep their marginal lines and keep them constantly cleaned, and the gingival margin must be so laid that it will be covered by the gum septum. Then if the form of the proximal surface,

and especially of the contact point, is so made that it will protect this gum septum, and sufficiently prominent to reserve the full mesio-distal breadth of the tooth, the permanence of the filling made with technical skill is assured. The cutting of cavities to these lines is termed extension for prevention. It applies to all proximal cavities.

STUDY CONDITIONS CAREFULLY.

For development in the highest skill in carrying out these procedures the conditions should be carefully studied from mouth to mouth in these cases presented in practice. In persons belonging to highly susceptible families and who present a number of beginning decays, close examination will show, when the surfaces are cleaned and dried, whitened areas of enamel leading away from the central area of penetration to the buccal (or labial) and to the lingual close to the margin of the gum. This is really incipient decay and it should be carefully noted, and the form of the area studied with reference to the proximating teeth and to the marginal edge of the gum tissue. The directions taken by food in its excursions over the neighboring parts during mastication and its effect in cleaning the parts should receive especial attention. By this kind of study carried on from mouth to mouth the operator will learn to appreciate the areas of the surfaces of the teeth liable to decay and become able to lay the margins of cavities on lines of comparative immunity without cutting excessively.

By this plan of study it is found that the areas of liability of proximal surfaces broaden out to the buccal, or labial, and to the lingual along the line of the free margin of the gum or near it. Therefore, by extending the cavity so as to include these points within its marginal lines, squaring out the labio-gingival angle and the linguo-gingival angle in incisors and cuspids; and in bicuspids and molars in addition to squaring out the buccal and linguo-gingival angles cutting the buccal and lingual walls parallel from the occlusal surface until the gum margin is reached, and the gingival margin straight from buccal to lingual, these areas of liability to the recurrence of decay will be included in the cavity. At the same time the form of the cavity will be greatly improved in the physical sense so that the filling is more quickly and easily made, facilitating accuracy in the operative procedure.

Studies of this nature will, after some time, enable the operator to form a better estimate of the necessity for extension in particular cases. As the general rule it will be found that as persons grow older and the intensity of susceptibility has diminished, and especially in those in whom the tendency to caries has never been great, the areas of liability are comparatively smaller. In these the extension required will be correspondingly less.

These processes are carried out for their curative and prophylactic value. Much simpler fillings, in the technical sense, may be made, and have been made, in these cavities in the past, but have been found lacking in prophylactic value. Decay is continually recurring about the margins of the fillings, whenever these are involved in habitual uncleanliness, and they are soon undermined and destroyed. Extension for prevention intelligently adapted to the conditions and skillfully carried out has been found an effective remedy.

EXTENSION LIMITED.

In the use of extension for prevention, there is no call for extension around the angles of the teeth onto either buccal, labial or lingual surfaces. Objection has been made in some journal articles and society discussions that cavities had to be cut inordinately large in order to comply with the requirements, especially in the front teeth. This is from a misunderstanding of what is meant. In the front teeth there should be no cutting over onto the labial surface, nor should there be any considerable show of gold fillings for the purpose of satisfying the rules of extension for prevention. Decay seldom begins on the angles of any of the teeth, and especially is this rare in the angles of the incisors and cuspids. When cavities in these are so cut that the margins approach the angles sufficiently to free them well from near contact with the proximating tooth, extension for prevention is satisfied, as a general rule. An incisor should never be cut onto the labial for the purpose of extension for prevention in the preparation of a cavity. It is only when decay has extended so as to undermine and practically destroy a portion of the enamel of the labial surface that it should be cut away. In these teeth the necessities for extension for prevention relate almost exclusively to broadening the cavity to the labio-gingival and linguo-gingival or squaring out the ordinary rounded form of the gingival wall

and making the labial and lingual walls straight from near the incisal angle to the labio-gingival and linguo-gingival angles. This was distinctly pointed out and illustrated in my articles of 1891, in the *Dental Cosmos*. The same rules apply to bicuspids and molars, with this difference: Incisor cavities must be filled from the labial or lingual because they are not cut out to the incisal; proximal cavities in bicuspids and molars are cut out to the occlusal and must be filled from the occlusal. Therefore, for convenience in operating, and in order that the filling can with certainty be well made, it is necessary that the cavity be as broad bucco-lingually at the occlusal as at the gingival. Therefore, any extension made at the gingival toward the buccal or lingual must be carried out to the occlusal. This makes cavities somewhat larger in these surfaces. But in no case is it necessary to extend to the angle of the tooth, much less beyond the angle, in satisfying the demands of extension for prevention. Large fillings extending far out onto buccal or labial surfaces should be made only when demanded by extension of decay.

THE RED CROSS IN DENTISTRY.

BY H. M. SEMANS, A. M., D. D. S., COLUMBUS, OHIO.

Professor of Dental Anatomy and Operative Technics, Dental College, Ohio Medical University.

I try to impress my students with the fact that the keystone to successful dentistry is manipulative skill.

To be clean, mentally and morally, and equipped with the training obtained in a general dental knowledge at college and in office, these two, like corresponding sides of an arch made strong and firm with the keystone "manipulative skill," will insure an honorable, successful life. If the arch is defective on the right side, or the left side, or at the top, the usefulness and beauty of the whole structure is marred. If we remain deficient in any one of the three above attributes our dental structure remains weak, weeds grow over us and we are soon forgotten. If we exact improvement in ourselves, we have twenty years in building, fol- our course through life is haphazard; sooner or later we fall, the lowed by twenty years in the enjoyment of a successful profes-

sional life made possible by close observance to the two sides and the keystone of the arch.

A clean life; we can all start with that. A general dental knowledge; that we may easily have, and the seeking after it should be one of the enjoyments of our life. But skillfulness in manipulation we are apt to allow to look after itself. We know we must be cleanly in habits or else our patients leave us; we know we must have knowledge of our profession or else patients are not forthcoming. Thusly equipped we start out in life. Our successes we tell to the world; our failures, to the world we grant none, to ourselves we are apt to curse our ill-luck and bat ahead. An old philosopher once said: "Show me the man who made failures the first half of his life, but each failure was but a spur to something better, and I will show you the man whose latter half of life was crowned with honor."

A dental symposium in which the failures alone would be presented might at first thought seem like the old time dishonored bone-yard. But did you ever notice the beautiful yellow ripe fields ready for the harvest? It was bone-dust that did it. We fear and dread the knowledge of others of our failures, then let's each one of us form our own little symposium. Why not do this? After each piece of work is finished, place in the remark column wherein improvement might be made. If our patient was handled in the most comfortable way possible, and if our work allowed of no criticism whatsoever, then place a red cross in that same column. There are endless little ways and means we will find we are picking up here and there; in our magazines, in our societies, in our daily contact with others, yes, and in our own striving to do better next time. If we are truthful to ourselves the red cross will be seen just enough to be an incentive to see more of it. If, however, we place the red cross after every case, then catch up the harp, unfold the wings and fly away to heaven. Either we will crash to earth in our own conceit, or else the pearly gates will open, heaven's retinue will receive us and upon our brow will be placed the still unused diadem with this inscription: "Though but mortal, perfection was achieved."

REGULAR CONTRIBUTIONS

A SYSTEM OF PORCELAIN INLAY.*

BY ARTHUR E. PECK, M. D., D. D. S., MINNEAPOLIS, MINN.

(Continued from February Summary, page 104.)

A METHOD FOR BUILDING ANTERIOR CONTOUR AND OCCLUSAL FILLINGS.

For an explanation of this method, a cavity of the fourth class (Plate XI, Figure AH), advanced through the various stages to completion, will serve to illustrate the principles involved, which can also be applied to occlusal cavities.

After the cement impression has been taken, as previously described, crowd a piece of soft modeling compound into the cavity, and, while in position, trim until it represents an inlay of the desired shape. Plate XI, Figure AI, shows the compound inlay in position. Remove this inlay and place it in the invested matrix (Figure AJ), which represents the cavity from which it has been taken. If it fits the platinum matrix, you can feel sure of a perfect fitting inlay, as this step will prove the correctness of your work. Now fasten the modeling compound inlay to the matrix on the lingual side with wax. Dust the investment and compound inlay with soapstone and mix a sufficient quantity of cement according to the instructions previously given for taking an impression. Crowd this over the modeling compound inlay, but do not allow the cement to extend beyond the platinum as it will adhere to the plaster and be apt to disturb the matrix when it is removed.

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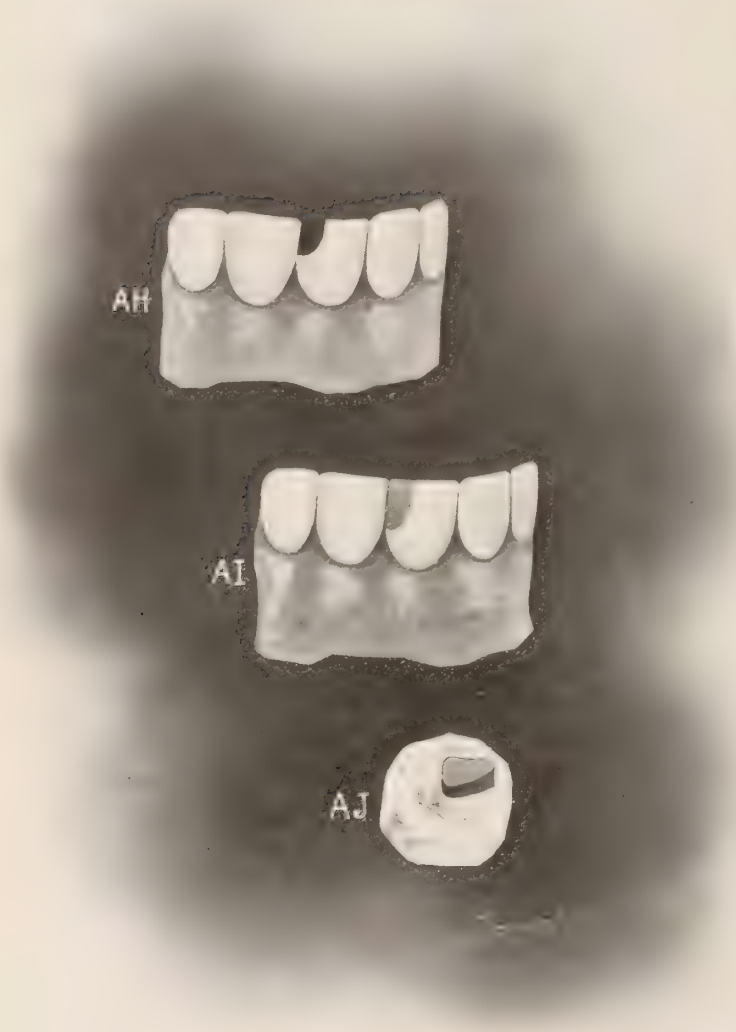

PLATE XI.

The cement counter-die is now removed and invested in the die-cup, and a platinum counter-matrix struck up. To do this without tearing the matrix, dust the cement counter-die with soapstone, then warm the end of a piece of modeling compound over a flame and after moistening the fingers in water, draw it down to a point and press it into the cement counter-die.

The modeling compound die will serve to form the platinum over, as it can be folded on itself so as to prevent tearing; and while the platinum is on the modeling compound die, force it into the cement counter-die. Now remove the modeling compound, leaving the platinum matrix in the cement counter-die and place the die-cup in the die-cup receptacle and swage it to place, following the instructions found in the article on matrix formation. The counter-matrix is then removed and invested in the investing material which can be held over the flame to hasten setting.

Both the platinum counter-die and matrix are now covered with a thin layer of the porcelain, the color desired for the surface of the finished inlay and baked to a bright glaze. The foundation colors are laid last, the reverse of the usual methods. The porcelain must not encroach on the margins as it would prevent approximation of the platinum counter-matrix with the matrix. The porcelain is then fused in the counter-matrix until it is nearly full; this usually requires two or three bakings. If you should get a surplus of porcelain in the counter-matrix, with a gemstone grind out enough to allow the parts to go to place, then apply a quantity of moist porcelain powder on the approximating surfaces and gently crowd them together. If this is found to be difficult, moisten the powder freely and it will go to its proper position. The counter-matrix and matrix are now fused together. When this is done, remove the platinum counter-matrix and with a brush fill in any defects in the surface and fuse to a velvet gloss.

This will produce an inlay slightly larger in all directions, but in the true alignment. It is finished according to instruc-

tions found on Contour, and Margins and Insertion of the Inlay.

This method for building a contour should be used in cavities of the fourth, sixth, seventh, and eighth classes.

The system of cavity preparation that has been given only aims to give typical preparations in each class, trying to demonstrate the retention which can be obtained and the great benefit of having it so prepared that the cavities will produce an inlay which gives all the strength that is possible to obtain from the material used. Space will not permit of the variations in cavity preparation that are found in my book on this subject.

FUSING THE INLAY.

For the first baking, place a thin even layer of powder over the matrix, just enough to cover it, then with your brush, clean a strip about 1-32 of an inch in width around the part of the matrix representing the margin of the cavity and fuse to a bright glaze. This margin must be kept clean from porcelain for the first two bakings. The building of the inlay for the second baking depends upon the class of cavities involved. If it is for the first, second, third or fifth class, one can follow the lines of the matrix, building the inlay a little more than full. If it is for the fourth, sixth, seventh or eighth class the instructions on page 68, for building contour fillings should be followed. The second baking should be from fifteen to twenty seconds less than the first, and the succeeding bakings fifteen seconds less than the second. This system aims not not to disturb the first baking with the second, or the second with the third. The last coat should be brought to a satin gloss. It usually requires three bakings to complete the inlay. The time required to obtain the bright glaze of the first baking cannot be given, as it depends on the stability of the electric current, the button which the control lever rests on, the winding of the muffle, and the porcelain used. This may require some experimenting, but can soon be obtained by placing a pellet of gold just inside the furnace door and taking your time from the melting of the gold until you get the bright

glaze. Then follow the previous instructions for each succeeding baking. This rule also holds good with the gasoline furnace. Great care should be taken to prevent all drafts from striking the furnace while baking. After each baking, and while the furnace is at its maximum temperature, the inlay should be removed to the asbestos cooling disk, and covered immediately with the cooling cap, which should be previously heated by setting on top of the furnace while baking. Allow it to remain over the inlay until it is at the temperature of the room before opening, as disastrous results will follow if this point is not observed.

It should be remembered that the margins of the inlay must be well covered at the last bake, as the writer is a firm believer in the ground margin instead of a fused one. My experience with the fusing of porcelain shows either a rounded margin, or a sharp, overhanging edge, either one being undesirable. The overhanging edge resting on the tooth beyond the margin of the filling, prevents the true adaptation of the inlay from being seen. This condition presents to the casual observer a pleasing appearance, but the careful operator ought not to be satisfied with a condition of this kind. A gold filling that protruded beyond the tooth would not be tolerated, and we should not allow the same condition to exist with porcelain. This frail margin is sure to chip sooner or later, leaving an unsightly blemish.

(To be continued.)

THE TREATMENT OF PYORRHOEA ALVEOLARIS (SO-CALLED) WITH THE X-RAYS.*

BY WESTON A. PRICE, D. D. S., M. E., CLEVELAND, OHIO.

At the request of your Program Committee I will present to this Society the results of my experiments in the treatment of this common but stubborn disease with the Roentgen rays. In preparing the report I have tried to err on the conservative side, and will prefer to let others who have seen the cases before and dur-

*Read before the Cleveland Dental Society, January, 1904.

ing and after the treatment, some of whom are here, report in as much detail as they will. For obvious reasons I have avoided a discussion of the etiology and differentiation. In 1900 I made a series of studies with sciagraphs of the alveolar structure of a few typical cases of so-called pyorrhoea alveolaris, noting the diminution of the lime salts by the less density or absence of the bony tissues, and was especially interested in one particular case which was very aggravated. The flow of pus was profuse and the discomfort quite severe and continuous. The teeth, the lower left molars, were quite loose. I made several X-ray pictures of the case when inserting some fillings in the anterior teeth. The patient was urged to have the pockets and teeth thoroughly cleansed and treated, and an appointment was made for the purpose, but he broke the engagement and was disinclined to make another, stating that the teeth were not worth the time. Some months later he came to the office and stated that for some reason his teeth were very much better and on close examination I found that the tissues had lost much of their previous appearance and the presence of pus which before had been so profuse, was only slightly discernable. The whole condition was very greatly improved. I saw the case frequently for the next year and although the condition was quite distressing on the other side, this side remained quite free from either discomfort or pus. This case had about five or six exposures. I thought the X-rays might have had something to do with the results but feared it only a coincidence; however, I determined to make a test case as soon as I would have a typical and extreme case.

ANOTHER TEST CASE.

I finally found such a case where the patient, Mr. H., age about fifty, was willing to be experimented upon. He had been troubled a great deal for the preceding five or six years, during which time the right upper lateral had loosened and been lost, and the cuspid adjoining was very sore and somewhat loose, and with a very profuse flow of pus. He said there had not been a time for years when he would not press a quantity of pus from the cavity, as much as a drop every time he would put his finger over that tooth. The centrals were quite badly affected as was also the right cuspid just below. About ten to twenty minutes was spent in removing readily removable deposit and debris from all these teeth

and an opaque mask was put over his face being careful always to cover the lower cuspid and expose the upper cuspid root area. The test was to try exposing the worst tooth to the X-rays and protect the rest, very particularly the lower cuspid. The patient's business, and probably more than a little his lack of hope for any beneficial effect, made it very difficult to get sittings regularly, but a number of treatments were carefully made from one to two weeks apart, and whether incidentally or not the presence of pus rapidly disappeared from the upper cuspid under treatment, while there was no change for the better around the lower cuspid. The congested and bluish angry gum with its gapping pocket around the tooth being treated gradually and quite rapidly changed to a pinkish white and the thickening reduced to about a normal gingival margin. A very marked change in the condition was that the gapping pocket constricted until the tissue hugged the root quite closely, so that it took perceptible pressure to pass a scaler between the tooth and gums into the pocket. There was a very marked change in the response of the tissues. Before the treatments the tooth was very tender to brush, and the gums painful. It caused much pain to put an instrument into the sensitive pocket and after the series of treatments this sensitiveness disappeared. The patient described the change as being, that before treatment the tooth felt like a foreign substance and an irritant, and afterward felt like his own tooth. This upper cuspid area had no treatment that the lower did not have *except the exposure to the X-rays.* It is now seven months since the last treatment and there is no recurrence of pus or any of the typical symptoms, and the lower cuspid still has its flow of pus on pressure and also much tenderness and has continually grown worse. The upper centrals were generally partially or wholly exposed during the treatments and while the condition was not aggravated around them to start with they too were very materially improved. I have had some others watch the results of these cases with me in order that a more correct judgment might be secured, among them our president, Doctor McDill and Doctor Yahres, whose criticisms and opinion we desire to hear. In this case the alveolar pocket seems to have been restored, for where an instrument could be passed deep into the pocket at least half an inch on the mesial side of the root it is impossible to pass anything in now. The pocket is completely closed as you will see by inspection of this patient who has kindly consented to come.

VERY DIFFICULT CASE.

Encouraged by this result, but feeling that it might all be due to some other unobserved cause, I tried some very difficult unpromising cases. Mrs. G., age about sixty, stout and rheumatic, knew of the encouraging results of the last case and begged to have the treatment applied to her teeth. The upper cuspids, particularly the right, were very bad, but her lower centrals and cuspids were worse, indeed very bad. The loose lower incisors had been supported by a splint attached to the laterals, and the gums about them all were very much inflamed and swollen, and I think the most sensitive tissue I have ever tried to work around. I tried to remove the debris around the roots, but could not go into the pockets. After a few treatments I could work around the cuspids and laterals, but the centrals were still very sensitive. From the first the hemorrhage had been profuse, and a dark blue indicating a very stagnant circulation. I took a skiagraph of the teeth and found the attachment gone almost entirely, even to the apices of the centrals and decided that the splint was about all that kept them from dropping out, and accordingly removed their attachments to it, and easily took them away and replaced them with artificial ones attached to the same splint. The treatments were continued once or twice a week until in all about ten or twelve treatments were given, always protecting the very bad upper right cuspid from the rays in order that a good test might be made. The pain was so much relieved after the treatments that the patient entreated me to make very frequent exposures to the rays. My fear and dread of burning the patient, or of over treating, because of the difficulty of protecting her with the inconvenient apparatus I had to use to make the application, restrained me from very frequent treatments until I could perfect something better, which I seemed to be unable to find time to do. It is very significant that, though the lady had to come a long distance and was not able to get on and off the cars without considerable difficulty and danger, she would call up between appointments for permission to come, giving as her reason that her gums felt so much better for a day or two after treatments. The results were that the soreness and swelling and redness and particularly the presence of pus were entirely removed from all the lower teeth exposed. The gums took a very normal shape and light pink color, constricting about the teeth, and a very signifi-

cant condition is that while hemorrhage is produced with some difficulty it is red blood instead of a dark blue, showing a very marked improvement in the functional activity of the tissues.

The upper cuspid which was protected from the X-rays but had the same amount of cleaning and scaling, in fact more, showed no improvement whatever. This was the condition when I left in June for my vacation, and if anything, her lower teeth have improved since that time. It is a strange coincidence that this upper cuspid which had exactly the same treatment as her other teeth, except that it was protected from the X-rays, should have fared just like the teeth protected from the X-rays of the last cited case.

On my return from my vacation this elderly patient was on hand to have this upper cuspid treated. The flow of the pus on pressure was very profuse, and the tooth very sensitive to concussion. The inflamed gum bled on the slightest irritation, the hemorrhage being very dark. No treatment was given except the removal of the easily accessible debris and deposit and the exposure to the X-rays, and in six weeks not only was the presence of pus entirely gone but the gums had become quite normal in shape and color and the tooth become quite rigid. She left the city for a visit at that time.

She has lost in the last ten or fifteen years about one-third of her teeth, notwithstanding that she gave them thorough care and treatment.

ANOTHER SEVERE CASE.

The next case I will report was Miss F., age about twenty-eight or thirty, who is under treatment at present. The condition was one of very unusual acute pain, and sensitiveness. The pockets were very deep, the first upper right molar was as sore and painful as if abscessed at the apex of its roots, and in fact we thought it was until I took a skiagraph of it finding that there was no trouble at the apices of the roots, but found that the alveolar process was gone in some places to the last third of the root. The left lateral was elongated about an eighth of an inch or more, and very loose, and was so painful to touch that she could not for a long time even bite into bread with it. This tooth had a liberal flow of pus and the hemorrhage was very profuse, but very dark in color. Very little debris or deposit could be removed from it owing to the extreme painfulness, and I de-

sired to avoid using sedatives or medicaments of any kind in all these tests to avoid sources of error in conclusions. This tooth was considered hopeless when we started and was only treated for an observation of the change of symptoms if any under X-ray treatment. By the third or fourth treatment of all her teeth, with an inefficient and an unsatisfactory method of making the application, the tenderness of all the sore teeth had gone and a very marked diminution if not entire absence of the pus, and by the tenth treatment the color and contour of the gums was almost normal. A most significant change was that the access into the pockets became much more difficult, the gum tissue was constricted around the teeth in a most surprising and gratifying manner. No means was used to make rigid the loose lateral which seemed loose enough to be picked out easily with the fingers. As the patient expressed it voluntarily, "That tooth has lost all its painful tenderness, why it felt just like something that did not belong there, but now it feels just like my own tooth; why I bite into apples or anything and never think of it now." This skiagraph made when the treatment was begun shows the depth of the pocket all around the tooth, and certainly the tooth should properly have been supported for any kind of treatment, but was not in this case to add to the difficulty, and to exclude all other treatments except the X-rays. The patient has now been under this treatment for just eight weeks, having had just sixteen short treatments, and for some time has felt no discomfort, she says, from any of the teeth, and all of them are evry much improved. They are not cured yet, but very greatly improved.

OTHER CASES.

I have treated less faithfully several other cases and because the experiments were not so carefully carried out and for lack of time, will not report them in detail, but in the general this statement, that in no case could I discern any deleterious or undesirable effects, and in no case that could be said to have been treated at all faithfully was there the absence of some more or less marked improvement in the conditions. In some cases where only one or two treatments were made I could not discern any changes. A couple of cases that got only a couple of treatments seemed to improve at first, and then go back after the treatments were discontinued.

It is too soon to judge whether the improvement in those cases that were apparently greatly helped will be more than temporary. However, the first patient has lately passed through a very severe illness without a recurrence about the teeth treated.

I shall demonstrate my method of making the treatment. When I first started this experimenting I did not cover the patient and treated the gums through the lips and checks. Later in order to protect the patient, I devised an opaque cloth and cut a hole in a blanket of it and with it covered the patient's head and shoulders, with the hole over the patient's mouth, or part of the mouth. Later I made a tube shield with a mouthpiece which cut off all the rays from the tube except what would go through the cone and mouthpiece. At first I used a very large volume of rays at a distance of twelve or fifteen inches, then a smaller volume closer and now I use a very small special tube right against the tissues, with a relatively smaller volume to allow for the difference in the distance, for the concentration of the rays is inversely in proportion to the square of the distance from the source of the rays. These different tubes show the attachments and methods of applying.

SPECIAL TUBE.

I have devised a special tube which I expect will very greatly simplify and add to the convenience of making these applications. It reduces the inconvenience of the application very considerably and allows of treating the teeth from the inside as well as from the outside, which has been the only way heretofore and also protects all parts not desired to be exposed. Since the distance between the source of the rays and the tissues has been reduced in this tube from ten or fiften inches to one-half inch, the time is reduced not in proportion to the difference in the distance but to the square of the difference, and hence if the same volume of X-rays were used, if it took five minutes for a proper exposure at ten and a half inches from the tissues to the anticathode it would take 5x1-10x10 or one-hundredth of five minutes or three seconds at one-half inch distance, which distance I can use with this special tube. Notice I said if the same volume of X-rays were used, but we do not and cannot use nearly so large a volume in this tube, probably about one-tenth as great, so we must regulate the time accordingly, say 30 seconds.

CLEANLINESS.

I believe thorough, very thorough if possible, cleanliness of the pockets should be secured for any possible kind of treatment of this disease, and suitable washes and sterilizing solutions should be used liberally. Please note that purposely this was not done with any of these cases to excluded errors in conclusions. Since we can with this new form of tube treat the gums from both the inside and outside and at close range we do not require so high a penetration, and accordingly do not require a large coil. On account of these conditions prevailing I believe an outfit for this work can be produced at relatively a small cost as compared with a powerful X-ray outfit. Probably seventy-five dollars or possibly less. There are very necessary precautions for protecting the patient's lips and hands from the effects of the rays which are to always have all tissues not necessary to be exposed protected or shielded by some substance that is opaque to the X-rays. My new tube is provided with this. I have devised an opaque rubber cloth that is very satisfactory for protection being both very flexible and very opaque. All tissues, whether the patient's or the operator's, become more and more easily influenced by the X-rays under continued exposure, the effect being accumulative. This should be borne in mind.

Some of these patients were examined at my office this afternoon by some of the members of the society and one patient has given you the privilege of seeing him here. I will be glad to try to arrange an opportunity for any of you who have not had an opportunity to see these cases to do so where you can study them carefully.

It is very significant that in every case the teeth exposed to the X-rays were so markedly improved, while at the same time those not exposed to the X-rays but otherwise treated, the same either got worse or did not improve.

OBSERVATIONS OF DR. J. M. YAHRES.

Through the kindness of Doctor Price it was my good fortune to see the cases referred to in the paper before the Cleveland Dental Society on the "Treatment of Pyorrhoea Alveolaris with the X-rays." In the first case, that of Mr. H., I saw it after the second treatment, about a year ago. The tooth under treatment, an upper cuspid, right side, had about it very angry looking

gum tissue of bluish red color, a constant accumulation of pus and very deep pockets. Mr. H. told me he could by pressure remove pus from pocket many times during the day. The lower cuspid on same side was also in a bad condition, but was shielded from action of X-rays, so that he might the more positively ascertain the results of X-ray treatment on the upper tooth. Today I saw the case again, the gum tissue had lost its angry look and looked almost normal, the flow of pus had ceased and pocket had decreased from five-eights to about one-eighth of an inch in depth. When we consider the fact that the last treatment to this tooth had been given seven months ago; that no medicaments had been used, and that the lower cuspid which had been shielded from action of X-rays was in the same condition as before, we cannot but say there has been a great change wrought through the action of the X-rays. The second case, that of Mrs. C., I saw but once, I therefore cannot say much other than repeat what she said regarding the treatments at that time. She seemed to be delighted with the effect of the treatment and results and said the only trouble was that the doctor could not give her appointment often enough to suit her.

The third case, that of Miss F., I saw but twice. The first time about three months ago, just before receiving the third treatment. I found pus, deep pockets, elongation of tooth and extreme soreness, so sore that patient could not allow anything to touch it when eating. I saw the case today, and found pus had ceased, and patient said all soreness had disappeared and tooth felt as if it belonged to her. As the doctor says in his paper, he does not claim these cases are cured and we all know that a year is too soon to judge on the result of treatment of this condition. Yet we all must admit that there certainly was a great change wrought in the case of Mr. H., and as X-ray was the only means used, it must get the credit. We believe Doctor Price has opened a new channel for the relief of the suffering, and trust it may lead to a cure of this our worst enemy, who greets us so often, and yet of whom we know so little.

OBSERVATIONS BY DR. J. W. M'DILL.

My location in the city and the kindness of Doctor Price has given me the pleasure of watching these very interesting cases. The paper is to a degree a scientific one and yet it can hardly

be classed as a scientific paper as easily as it can be a practical one. In the face of so many failures incident to the introduction of many new ideas and theories one comforting thing crops out in the paper almost as a preface.

The essayist modestly lays no claim to cures, in fact he cites no cases as cured, simply cases benefited, case seemingly cured either directly or indirectly from the application of the Roentgen rays.

About twelve months ago in the case of Mr. H., the upper right cuspid presented a typical case of pyorrhoea alveolaris. The tooth seemed very loose, extremely sore, especially so when molected. The tissues around the tooth were highly inflamed, quite badly receded and had lost their attachment, in fact so much so that an instrument could be inserted along the root for more than half an inch. This operation caused a profuse hemorrhage. Pressure upon the parts adjacent would always bring a flow of pus. The right lower cuspid presented almost the same appearance. Without removing much of the debris or calculus from the upper cuspid the X-ray was applied. During this procedure the lower cuspid was protected with a special opaque cloth which prevented action of any kind upon it. After a lapse of twelve months this upper cuspid tooth seems to be in a normal condition. Inflammation having disappeared, the tooth seemed tight in the process, the tissues seemed perfectly attached about the gingival margin, precluding an instrument at all places. The pus had entirely disappeared and what blood did flow was of a healthy red color, while before it was of a bluish tinge. The lower cuspid, which had been protected from the X-rays, was in even worse condition than eight months ago.

The case of Miss F. was very similar to the former. The tooth in question being a left upper lateral incisor, very loose, a large quantity of pus about the root, tissues highly inflamed and elongated one-sixteenth of an inch. An instrument could be inserted almost to the apex of the root and the sensitiveness interfered very materially with mastication. Biting into an apple as Miss F. said caused "excruciating pain." As before, without removing much of the debris or calculus, the tooth and tissues adjacent were exposed to the rays.

The treatment thus far has been very gratifying indeed as the tooth now seems tight, the tissues are in their normal condition,

the hemorrhage is of a healthy nature, the soreness has disappeared, an instrument is inserted with difficulty above the gingival margin and while the tooth is still elongated much can be done toward placing it in its normal position by the use of some appliance. I trust these may develop into permanent cures instead of only giving temporary relief and thus aid us in coping with a very troublesome, obstinate and discouraging condition we so often find.

IMMEDIATE REMOVAL OF LIVE PULP BY PAINLESS METHOD.*

BY DR. CLYDE DAVIS, LINCOLN, NEB.

I have been using this method successfully since December, 1902, and have given it for the good of the profession. There are now several dentists in this city whom I have given the formula to and who are using it to good advantage. Apply the dam if possible, and dry the cavity. If pulp is not exposed, but covered with a layer of softened dentine, apply first a drop of adrenalin, then one drop of a 40 per cent. solution of formaldehyde. If quite a distance from the pulp use slight but continued pressure with a rubber plug for a few seconds; you can now excavate to complete or near exposure painlessly. You are now where we all make our application of arsenic for devitalization in that method and ready to begin with the operation. Then apply to the cavity one drop of adrenalin. Best apply by taking some up in the operating pliers by a capillary attraction, then lay in the cavity a few crystals of cocaine or a small one-sixth grain soluble tablet. After this operation is complete apply one drop as above of a forty per cent. solution formaldehyde. Apply pressure with a rubber plug at first very lightly, but steadily, but not enough pressure to cause patient any pain. Gradually increase the pressure until the end of forty to sixty seconds. You are kneading the rubber into the cavity with amalgam burnishers with all permissible force, none of which should cause patient any pain. Now remove your covering to your pulp chamber and pass broach slowly toward the apex. If there is a tendency to much hemorrhage or patient should feel to the slightest degree any movements of the broach, repeat

*Given as a clinic at Nebraska State Dental Society.

the method again being sure to omit the formaldehyde. At the close of which you can remove the pulp of any tooth without the patient feeling the operation, and cases where the tooth is slightly sore to percussion as in the advance stages of pulpitis the soreness will have disappeared, as many times I find that the peridental membrane has lost its tactile sense. In cases of large apical foramen and you are bothered with hemorrhage again apply the adrenalin only, with pressure for fifteen seconds, and not another drop of blood will be discharged. Those who prefer can proceed with root filling. I prefer to dress the root with a non-irritant dressing (mine is campho-phenique) for twenty-four hours and then fill. It is essential that the remedies be used in the order given or only partial success will result, as the adrenalin must be applied first to contract the pulp thus drawing it away from the exposure to prevent the pain. On your first making pressure you can use a rubber plug, or beeswax, or a patent rubber cup which is on the market. I prefer vulcanite red rubber. I could cite to the society many patients on whom I have operated successfully, having the best of results even from the most nervous woman patient who has sat in my chair, to be operated on by me. I could have made considerable out of this remedy, no doubt, but it would hardly have been considered professional to do so, so all I intend to do with it is to give it to the profession, and I ask that when this method is mentioned that I be given the credit for having discovered it, and my name mentioned in connection therewith.

SWAGING ALUMINUM MADE EASY.

BY L. P. HASKELL, CHICAGO, ILL.

A plaster impression of course; make no changes in it; fill as usual; upon removing the model build it up to requisite height one and one-half inches on a slab, sloping the sides so it will drop readily from the mold; shellac with thin shellac; with thin base-plate wax place a "relief," covering the hard palate from near top of ridge to within one-quarter inch of rear of plate, and extend plate to near on a line with base of tuberosities; shellac again. No scraping, no vacuum cavities; no grooves ever needed.

For die use only Babbitt metal as the only metal having *all*

the requisite qualities for a dental die. For counter-die: Lead 5 parts, tin 1 part, and do not pour until it begins to thicken, and one die and counter is sufficient.

Use 20 gauge aluminum; never anneal, as it is easily swaged without, and the plate is none too stiff in wear. As the metal is so soft it easily tears over the margin of the ridge; to prevent this, scrape away the portion of the counter-die wherever it enters an undercut, in front or at the tuberosities. After swaging the plate can readily be driven into these depressions. Never use the mallet over the palate as it will batter, but swage with a wad of wet paper over the palate.

The plate should be worn high as possible, but can and should be higher over the cuspid eminence than elsewhere and the gum fulled there. Of course, when this is properly done, there is no room for turning the edge which is entirely unnecessary, as the rubber makes a good finish for the margin. The loop-punch is the only reliable method of attaching the rubber; one row near the margin, four loops each side, and a row of eight on top of the ridge.

By the above method I will guarantee a quick and successful adaptation to the jaw.

SOME PRACTICAL HINTS.

BY L. W. JORDAN, D. D. S., BINGHAM, MAINE.

When the teeth are so close together that their rough edges cut the floss silk ligature, use a piece of binding wire instead as it works all right.

When the rubber dam will not stay where you want it under the gum, use fine copper wire as a ligature and it will readily adapt itself just where you desire it to stay.

BASE-PLATE MATERIAL.

Don't throw away your money buying base-plates with which to take the bite, but make a base-plate out of your old modelling compound. Have it thick enough to be strong and mold it when hot into your model, with the fingers, and trim. Mold beeswax onto this to get imprint of teeth, etc.

Before putting on your beeswax you can get the sort of re-

lief needed by cutting it in your modelling compound base-plate and noting how it stays up.

After having taken the bite, punch holes through the compound at right angles outlining your air chamber so that when you place it on the model you can run a small sharp instrument through the holes in the modelling compound base-plate and prick the plaster, showing the extremes of the borders of the air chamber, and where it is to be placed on the model.

In difficult mouths you will find this very satisfactory and it will save you many an hour making plates.

THE RUBBER DAM.

If you use your rubber dam a second time, make the pieces large enough so that when the holes are cut off you can use what is left for the anterior teeth. Don't make your laboratory look like a laundry by hanging up the rubber dam on a line; but after washing with soap and water, turning boiling water on it and rinsing it in cold water (I mean clean water in every case), place flat in a clean dry towel, fold over the towel onto the rubber dam so there will be a thickness of towel above as well as underneath, roll up towel and dam together and your dam will come out dry. With fastidious people, however, it is better to cut off the required piece from the roll in their presence.

CARE OF EXTRACTING INSTRUMENTS.

Do not be guilty of placing an unclean instrument into any one's mouth. Such instrument should be thoroughly washed and wiped dry with a clean cloth and the beaks smeared with undiluted camphor-phenique on a piece of cotton, or dipped into some other germicidal solution kept handy in a suitable vessel. I use campho-phenique full strength on a piece of cotton in the pliers. This being non-caustic works very satisfactorily with me. If I suspect any infectious disease I wash the instruments in lysol soap (Life-buoy soap) and put them into boiling water before wiping and placing germicide on the beaks.

A USEFUL BUR.

Take a good sized old dentate fissure bur, grind on the lathe carborundum wheel, without drawing temper, about one-half cutting area pyramidal shape with sharp angles from point to base

and the base shankwise. Do not have the apex point too sharp. It is great to clean out fissures in place of the ordinary bur and it saves your pocket-book too.

Don't be afraid to lay up a little for a rainy day. If we live long enough the time will come when we shall have to step aside for the younger man.

A FEW POINTERS.

BY DR. L. O. FRANTZ, ALLIANCE, O.

HOW TO ROLL GOLD.

In rolling gold foil into ropes use a small 6x6 inch napkin. One made by cutting a table napkin into four will answer best. Cut the sheet into halves or thirds or any size you wish and lay a piece on the napkin placing an eight-inch hat pin on top of the gold near one edge. Take the napkin by one edge and fold over the gold and pin, place the fingers of the left hand lightly over the napkin and gently draw from you. This will cause the gold to roll smoothly and uniformly around the hat pin forming a cylinder. With a little practice one is able to have their foil uniform and not rolled tight in one place and loose in another. I find that foil rolled by this method works easier than by any other.

AN EFFECTIVE SHADE.

Any one using electricity for light in the laboratory will find that a cheap and effective shade can be made out of a five-inch tin funnel by melting the small end off. Then take a pair of plate shears and cut slits in the small end about an inch long. Bend these around the socket and wrap a few strands of binding wire around the ends and you have a shade for five cents that is as good as one costing fifty cents. It is not the money a man makes but what he saves that counts in the end.

A SEVERE CASE OF ALVEOLAR HEMORRHAGE IN PRACTICE.*

BY DR. E. H. NAUMANN, COLUMBUS, NEB.

There is no doubt but that many of you present have had during your practice, severe cases of hemorrhage which seemed very difficult to control for a time, but after using some of the well-known remedies you succeeded in stopping the persistent flow of blood, and again no doubt there are those of you who could not succeed with the usual remedies at hand, but who had to resort to your own genius and invented something on the spot which would and did stop it. To the latter this paper will perhaps be of no benefit, you had the experience and mastered the situation and can, no doubt, do so again with like results. But to those who have not yet had a case where the ordinary remedies would not suffice, my statements, as to how a severe case of hemorrhage was controlled, may be useful at some future time, and may save you some troublesome hours.

A gentleman, age about twenty-six, sandy complexion, red-faced, farmer by occupation, presented himself at my office to have a lower left first molar extracted. The tooth was badly decayed, pulp alive and exposed. All other teeth in lower maxillary on the same side were in their places. I injected a local anesthetic and extracted the tooth. The tooth did not break and was not any more difficult to extract than a tooth in that place usually is. I handed the patient a glass of warm water to rinse his mouth and waited for him to leave the chair. Soon he drew my attention to the amount of blood he had to expectorate. I took some tannic acid and cotton, saturated the same with tincture of iodine and aconite, made into the shape of a ball and forced it down into the cavity of the extracted tooth, but it was only a few seconds before this was forced up and the blood came out as freely as ever; repeated treatments like this failed. Next I took sub-sulphate of iron, tannin and cotton, filled the cavity with it, but it, too, was forced up soon and the blood squirted out as much as ever. Repeated trials of the last remedy, holding it in place for a while, was of no avail. Whenever I would take my finger away with which I held the plug in the cavity the blood would work up again.

*Read before the Nebraska State Dental Society, 1903.

After spending about an hour with him, I noticed my patient was getting somewhat anxious and hinted that he would like to have their family physician present who knew the whole family for many years. I promptly complied with his wishes and called the doctor up. He came, tried all his remedies, internal and external, but the blood would not stop. After being with us for most of the time during two hours, the physician had to leave, expressing the belief that it would soon stop, but it would not. I took the patient in my full charge again, held the plug in place for one-half hour at a time, but always the blood would work out again when pressure was relieved. It was about three-thirty o'clock when I took the tooth out, but now it was about ten o'clock. My patient's home was about eight miles out in the country. I could stop the flow of blood as long as the cavity was plugged up with sub-sulphate of iron and cotton held firmly down by the pressure, but pressure must not be relieved. I decided it would be uncertain to depend on the patient to apply that pressure and therefore also uncertain to let the patient out of my sight for hours to come. So I went to work, cut off the left wing of a lower impression cup, softened some modelling compound, filled the cup and pressed it firmly over the plugged up cavity, had the patient bite onto this and bandaged his head and jaw in such manner that he could not open his mouth. "Now," I said, "you go with me to my home and we will sleep together to-night, so that I may be near you in case the blood begins to flow again." We went to bed about eleven o'clock after giving him some milk with a teaspoon through the partially opened mouth. (The mouth being partially opened on account of the cup and modelling compound on the left side.) Several times during the night I examined him and at seven o'clock in the morning we arose and all was well; not any blood had escaped since applying my invention. I fed him a couple of soft boiled eggs and milk and chocolate and sent him on home with strict orders not to remove the bandage, cup and modelling compound for four days, which order he obeyed and of course had no more trouble.

A PERFECT METHOD OF USING ARSENIC.

BY J. M. KING, D. D. S., BROOKSIDE, ALA.

You will be surprised at the gratifying results obtained by this method if when a patient presents himself and you diagnose his case and find he is troubled with the kind of odontalgia termed pulpitis and the pulp is fully exposed or nearly so. Take an engine bur of proper size and cut away loose decay, or excavators may be used. One can in some cases get along without the rubber dam but it is best to always use it. When the pulp is clean and cavity ready for dressing, have ready a piece of spunk damp with creosote and dip against arsenic only a small amount being necessary (probably about half the size of a pin head), put this against the pulp and press in place with a pellet of cotton in your pliers. Then mix enough cement to run over this and fill cavity. The nerve usually is ready to be removed in 24 hours, if not redress it lightly until the 48th hour. It is better to give the devitalizing agent 48 hours if convenient. The creosote preserves the pulp. It has been in my observation possible to kill nerves in this manner and have no trouble for a month or two and then take out dressing and drill out canals and put in permanent root filling. This I consider better than a paste and it always has a good effect as a divitalizing agent. Always be sure to cement so as to be entirely moisture proof.

HISTORY OF AN UNUSUAL CASE, WITH SOME OBSERVATIONS ON A DANGEROUS DRUG.*

BY DR. H. L. KING, WELLINGTON, OHIO.

A lady who travels during the season with a concert company, as elocutionist, was suffering from severe toothache in the left lower first molar, and while at Ann Arbor, Michigan, she called at a dental office for treatment, but as the dentist was absent, a physician who occupied the same reception room volunteered his services and placed some mendicament on cotton in the distal cavity of the tooth. However, this treatment af-

*Read before the Northern Ohio Dental Society, 1903.

forded no relief and after two days more of suffering the tooth was extracted with the aid of a local anesthetic by a Dayton dentist. The next day the patient arrived home and came under the care of her family physician and myself.

At my first visit I supposed the trouble to be due to the use of the local anesthetic by the Dayton man and prescribed soothing washes for local treatment and acetanilid compound for the pain.

Matters continued to grow worse, the gums did not slough, and swelled but little, but pain persisted in the socket of the extracted tooth, and the second and third malors ached almost intolerably. The lower jaw became locked so she could not open her mouth enough to take nourishment, and her constant demand was that the second and third molars, which were perfect teeth, be removed. This I hesitated to do until after a consultation, and Dr. G. T. King, of New London, was called. In relating the circumstances of the case to him, the patient mentioned that the physician at Ann Arbor had put arsenic in the cavity of the tooth that ached in order to kill the nerve and stop the pain, and had warned her to be careful about swallowing any of the medicine, as "it was deadly poison." After this revelation the two teeth were at once extracted and treatment began with dialized iron, but it seemed too late. The extraction afforded slight relief, but the swelling continued, and the jaw was locked as immovably as ever, and soon the pain returned in full force. Constant treatment locally with iron, peroxide of hydrogen and glyco-thymoline, and generally with opiates and stimulants, was continued, and produced short periods of relief, but the patient was entirely prostrated for over four weeks. During this time the pain extended to the cheek muscles and every indication was watched that tended to pointing of pus on the face. Finally fluctuation was found at the point of the ramus, and the physician, who had a week previous pronounced the case periostitis, proceeded to lance. A few drops only of pus were evacuated, the wound dressed as usual, and improvement began at once. It was three months before the jaw relaxed sufficiently to permit of comfortable eating, and

over a year before the mouth could be opened to its normal extent.

At different times during the three months of convalescence I removed small particles of process from the gum, but at no time was there any sloughing of the gum or the dark turgid appearance usual when arsenic destroys the gum. Now did arsenic cause all of this trouble, and if not, what did?

PECULIAR ACTION OF ARSENIC.

That arsenic would lock a joint was an unheard of theory to me until I learned of an undertaker who uses it in solution for holding the lower jaw in place when embalming a body. And this same undertaker claims that after using this arsenical embalming fluid in three or four cases in close succession, his hands become stiff and the knuckles swell and stiffen enough to become decidedly uncomfortable for two or three days. He thinks the absorption of the arsenic from the embalming fluid is responsible, as he has this trouble only when using arsenical fluids.

CARE IN SEALING IN ARSENIC.

I have had but two cases in seven years' practice in which an arsenical application escaped from a tooth where I sealed it. Neither of these cases resulted seriously, but I am convinced that the only way to effectually seal arsenic in a tooth is to use an oxyphosphate cement.

In Flagg's Dental Pathology and Therapeutics there are four methods recommended for maintaining in position an arsenical application. First, by cotton and oily carbolic acid secured by sandarac or mastic varnish. As I have never been able to seal any after treatment in a tooth with sandarac so that the patient could not taste the medicament, I decided it was too risky to try to retain arsenic with it. Second, by temporary stopping. As this is almost as notable a leaker as gutta-percha, it seems too unreliable for so important a position. Moreover, in placing temporary stopping, undue pressure is likely to be produced which will result in unnecessary pain, and if chloro-

percha be used, the cavity must be more elaborately prepared and dried than in using cement. Third, by oxyphosphate or nitrophosphate of zinc. This is a method par excellence. It effectually seals the cavity in which it is placed, if the cavity be properly dried. In large cavities which extend under the gum margin it is often feasible to use cement alone below the gum margin, filling up above the gum level, then making the arsenical application and sealing with a second cement mix. The cement can be mixed thin and dropped from the spatula, so that absolutely no pressure is placed on the application, aside from the actual weight of the material itself. It is easily and quickly removed and comparatively inexpensive. Flagg's fourth method is by using facing amalgam. I have never tried it for this purpose, but I believe it to be impossible to seal a tooth with amalgam. I have tried filling old roots with oxpara and finishing the job with amalgam, but the patient always complained of that "nasty taste" until I sealed the oxpara in the cavity with cement, and then finished with amalgam. Now there are no complaints.

Arsenic works such terrible havoc when once let loose, killing and sloughing the gum and causing necrosis of the process, resulting in the loss of other teeth, that the utmost precaution should be taken to prevent even the minutest portion of it being lodged on the gum.

LENGTH OF TIME ARSENIC SHOULD BE LEFT IN A TOOTH.

There seems to be much discussion in the journals regarding the length of time arsenic should be left in a tooth, and also as to where it should be placed. Some claim that forty-eight hours is plenty long enough, but I used to try opening up pulp chamber and canal after forty-eight hours' treatment, and found I always had to make another applicatioon. I leave most applications at least a week, and if the tooth be one of those strong, dense structures we occasionally find, I let it remain two or three weeks, though always cautioning the patient to call at the first sign of soreness.

APPLICATION OF THE ARSENIC.

As to where the arsenic is to be placed—I put it on the exposure every time, if there be one. As I use a mixture of cocaine, acetate of morphia, and oil of cloves, with arsenic, there is seldom any pain, and if placed directly on the exposure, the cocaine and morphia get in their fine work before time for pain to begin. However, if there be no exposure, I remove the decay as thoroughly as possible, and if I can do so without too much pain to the patient, I make an exposure. Otherwise the application is made on the dentine as close to the pulp as possible. I have never observed that either method was quicker in action or more painful than the other.

ACTION OF ARSENIC.

I have no theory as to how arsenic kills the pulp of a tooth, but it seems to me that all theories that have been advanced are weak and faulty. The old strangulation idea is still prevalent among dentists, but death of the pulp is still produced when the tissues are not confined to the unyielding walls of dentine. For example, in cases where there is a large exposure, or where the bulbous portion of the pulp has been removed and application made to deaden the filaments remaining in the canals. Flagg claims that arsenic is not absorbed by the pulp of a fully-formed tooth, because if it were, the pulp would be preserved by the arsenic, whereas it putresces after a time and Reinsch's test shows no arsenic in the dead pulp; but he also declares that in teeth in which the apical foramina are not fully developed, the larger foramen allows freer circulation and consequent absorption of the arsenic to such an extent as may involve the tissue outside the foramen, and as he says the roots of a first permanent molar are not fully developed until from twelve to fourteen years of age, I see I have been taking some long chances in sealing arsenic in those teeth at any age from eight upward. However, I have had no trouble, and if those same teeth can be kept in the mouth until all the rest have erupted, they will have served part of the purpose for which they were devitalized.

It is said that a frog may be killed and preserved from

putrescence by persistent application of one twenty-fifth grain of arsenic to its leg, and then arsenic will be found in every portion of its body. Now, why is this possible, when the same application may be made to a pulp and no trace be found in the dead pulp? It seems to me that there must be absorption of at least a small amount of the drug by the pulp. In general practice arsenic is applied locally as an escharotic to ulcerated surfaces, tumors, cancers, etc., and numerous cases have occurred in which enough was absorbed into the system to cause death; but Flagg says arsenic will not pass through dead tissue. However, the United States Dispensatory claims that absorption is less liable to follow the use of large than of small quantities, the larger amount probably killing the part to which it is applied, thereby preventing absorption to a certain extent. It also claims that absorption is less apt to occur where the surface is that of a chronic ulcer, than when that of a fresh wound, which also partly verifies Flagg's statement.

Taken altogether, it seems to me that very little is positively known regarding the action of arsenic on the pulp, and it seems to me a fruitful field for investigation.

DISCUSSION.

Dr. W. G. Ebersole, Cleveland, Ohio.—It is a very difficult matter to say just what produced the trouble in this case. I have seen the same trouble where there has been no local anesthetic used.

A great many of our leading men endeavor to do away with the use of arsenic in the devitalization of teeth. I do not believe that arsenic is as dangerous a drug as we sometimes believe, particularly when used in connection with cocaine. I use arsenious acid, cocaine and creosote for the application and aim to leave it in the tooth for about one week, depending upon circumstances. I generally warn the patient if they notice any soreness to let me know at once. I believe that the action of the cocaine in connection with the arsenic is such that it retards the action of the arsenic. It also does away with any of the

pain that is frequently experienced in the devitalization of the pulp. I endeavor to produce slight pressure. I could not do that if I did not use cocaine. Use temporary stopping first, then after producing some pressure, seal with cement.

You can also in using cocaine make an application to an inflamed pulp with more safety than with the other preparation and with less liability of trouble.

Dr. C. R. Butler, Cleveland, Ohio.—I would like to ask a question in regard to the action of cocaine, and why Dr. Ebersole says use it in connection with arsenic? He says he wants it there under pressure, being very careful not to force the arsenic through. I doubt very much whether Dr. Ebersole or any of the rest of us can push it through. I would like to know what the advantage is of putting the cocaine in there in connection with the arsenic if it must be there under pressure?

Dr. Ebersole.—The cocaine is used for the anesthetic effect produced, the arsenic then acts upon anesthetized tissue and you thus have an advantage you could not have without the use of cocaine.

Dr. Owens, Cleveland, Ohio.—I think we can get better results in destroying pulp by the use of cocaine with pressure than by the use of arsenic. However, arsenic has been one of the noblest drugs we have had to use in the past, and if used properly is still professional.

I do not believe that the arsenic should remain longer than necessary. In a tooth that is not much congested I should say that thirty-six hours is ample time for oral teeth and for molars, forty-eight hours.

When there is congestion so that arsenic will not act as readily upon the pulp I think the additional use of cocaine will help the dentist. I should never leave it longer than forty-eight hours. In regard to sealing arsenic in the tooth: In many cases where the cavity extends below the gum, my method is to take a steel matrix and wedge it in after cleaning out the cavity, then take some stopping and place in the upper

portion of the tooth before putting in the arsenical preparation. Then after putting in the arsenical preparation seal with Gilbert's stopping.

Dr. L. L. Barber, Toledo, Ohio.—Dr. Owens spoke of putting cocaine with arsenic in cases where there is a great deal of congestion and inflammation. Lest some of the young men might think that would do away with all the trouble in congested and inflamed pulps, I would simply say that wherever you will have trouble with arsenous acid you will have trouble with cocaine. You know that there are no pulps so hard to handle with the use of cocaine as those that are congested and inflamed. I simply want to correct the impression that some of the young men might get as to the use of cocaine on congested pulps.

Dr. F. Acker, Cleveland, Ohio.—I want to offer protest against the use of shot-gun prescriptions. We should use one drug at a time. Use simply some solvent for the arsenic to be placed in whatever place you want it without pressure and you won't need cocaine to put the tooth to sleep. Put it to sleep before applying the cocaine. I generally find that chloroform placed into the cavity will relieve pain within two or three minutes. Then make the arsenic application in whatever form you want. I never have any painful after-results unless in some cases of specially congested conditions.

Dr. W. A. Price, Cleveland, Ohio.—I am especially interested at present in the study of the effect of arsenic on the roots of teeth. I have been studying this with the use of the X-ray pictures and find that after putting arsenous acid in a tooth we have either a thickening of the membranes or in many cases a wasting of the process around the apex of the root. I could show you several X-ray pictures to demonstrate this. We also have considerable absorption around the apex of the tooth. The arsenic certainly penetrates through the tissue around the root. There is no doubt of this. I have something like a dozen cases of teeth that were devitalized with arsenic where there is an abscess at the apex of the root. In some cases the

arsenic was not in over twenty-four hours. That teaches me this, that even though we put arsenic in a root and the tooth tolerates it for a time we have produced more irritation and trouble than we have any idea of.

Dr. S. B. Dewey, Cleveland, Ohio.—I do not think that Dr. Price has proven conclusively that the arsenic caused the absorption. It may have been some fault in the dressing or covering.

Dr. Price.—I made an examination of the tooth before making application and it was very rigid.

Dr. Dewey.—Might not the inflammation itself cause the absorption?

Dr. Price.—What caused the inflammation?

Dr. Dewey.—It might not have been the arsenic. There might have been some other reasons for the inflammatory condition.

Dr. Price.—This is only one case of a dozen. I have not a single case where there was not absorption around the apex. This means to me that we have put an irritant in the canal that has caused the absorption of the bone around the tooth.

Dr. J. R. Bell, Cleveland, Ohio.—To satisfy myself that arsenic does penetrate the tooth tissue through the periosteum, I had an analysis made of a portion of a structure of a tooth, and arsenic was found.

You know that in ninety-nine cases out of one hundred where the nerve is exposed there is inflammation. That calls for preparatory treatment. No operation should go on before inflammation is reduced. It is a form of malpractice to introduce arsenic into a highly inflamed pulp. I hope I will never be guilty of using it again, as I think it is a most dangerous drug to use.

Dr. I. W. Brown, Cleveland, Ohio.—What do you use before applying arsenic or cocaine?

Dr. Bell.—Oil of cassia is the most soothing to use. By

applying this oil you get reduction of the inflammation so that you can remove the pulp by the use of cocaine with pressure.

Dr J. Taft, Ann Arbor, Mich.—It seems hardly necessary for me to make a statement in regard to this matter. I have given utterance so frequently upon this subject in meetings like this and before students that it seems to me everybody ought to know what I think about the use of arsenious acid for destroying pulps.

In regard to the use of this agent, I abandoned it twenty-five or thirty years ago. This substance is as poisonous and injurious to the dental tissue as it would be to the digestive organs if taken into them and many of you know it; but persons will often know things of this kind and still go on in the use of the materials. This is true as much in the dental profession as in other cases.

I have treated hundreds of cases in the infirmary during the last few years, and have noticed that in more than fifty per cent. of the cases where arsenious acid was used by the students in devitalizing pulps that more or less periostal disturbance occurred.

Admitting these facts, are you willing to continue in this deletorious practice? What are we coming to? You say an exposed pulp must be killed. Whether or not it must be killed depends upon circumstances. In a great many cases the life of the pulp can be saved, or if it must be killed you can anesthetize it with the use of cocaine with pressure and no pain will be experienced.

Don't use arsenious acid, whatever you do.

Dr. Henry Barnes, Cleveland, Ohio.—If we could persuade every man in this room to discontinue the use of arsenic it would be time well spent. There is no necessity for using a prepartion of arsenious acid in the teeth. Every case can be taken care of without it.

Dr. Dewey touched upon the most difficult case we have to treat, and that is where a person is well advanced in years and there are calcareous deposits in the pulp. In these case we fre-

quently find that the tissue in the canals is almost entirely destroyed. This tissue is very much congested and when you try to introduce cocaine into it you simply press that pulp against the walls of the cavity and prevent the absorption of the cocaine into the pulp. Cut away as much as possible of the covering over that pulp, get free access to it, then if you find the cocaine does not enter as rapidly as you expected, gently press it into that portion. By and by you can take off a portion of that, then take a fine hypodermic needle and gently work it down the side of the pulp into the canal, and inject your cocaine solution. On top of that put your gutta-percha and whatever material you may use to press that in with. This will anesthetize the pulp where you want it. I never use cement for sealing, as I do not see the necessity of it.

A great many cases of arsenical poisoning are due to absolute carelessness in making the application.

Dr. Owens, Cleveland, Ohio.—Dr. Dewey wants to know how to proceed in cases where there is a calcific deposit and a great deal of irritation. In such cases I would take a sharp drill and drill to the pulp. Then dry out the cavity and put in cocaine, adding a small drop of water so as to make a solution. Then use pressure sufficient to cause the cocaine to enter the pulp. In many cases one application will be sufficient to anesthetize the pulp so you can drill in and remove the deposit and remove the pulp.

Dr. Taft, Cincinnati, Ohio.—You use local or general anesthetics for extracting teeth. Would it not be just as important to use local or general anesthesia in the way of chloroform or ether for the preservation of a good tooth as for destroying one? You can anesthetize a paitent in a very few minutes and extract a tooth without giving pain.

Dr. I. W. Brown, Cleveland, Ohio.—For the difficulty Dr. Dewey speaks of I would suggest the following: Where there is a wearing down of the tooth, put your rubber dam on and fit this so that you can drill until it is sensitive and then apply a solution of cocaine, and you can then go clear to the pulp and not hurt the patient.

PHOSPHOR-NECROSIS.*

BY F. W. KNOWLTON, D. D. S., AKRON, OHIO.

Phosphor-necrosis is a term used to signify a disease of the maxillary bones to which people employed in the manufacture of phosphorus, phosphor bronze and certain varieties of matches, are liable. Dr. Lorinser, of Vienna, in the year 1839, first recognized and described the disease, nine cases coming under his charge during six years following, in people employed in the making of matches, many cases presenting themselves yearly in the various match centers. The misery and deformity resulting from the disease, together with its steady increase of cases, threatened the destruction of the business itself, and has ever continued a serious problem, the solution of which has been practically demonstrated within the last few years.

To the direct or indirect action of phosphorus or its oxides is attributed phospho-necrosis, manifesting itself in the maxillary bones principally, the teeth themselves, together with the soft tissues being free from any serious effects of its action.

Many attribute the irritating chemical action of phosphorus or its fumes to the hard tissues direct, as through open root canals, sinuses, or to the sockets of recently extracted teeth, as the sole cause, producing as it were an inflammation of the periostium or bone, resulting in the complete death of the part. Others hold that systemic conditions, brought about by inhalation and absorption through long continued contact, an important factor in the proposition. The latter conditions have had to do with our experience largely.

Predisposition determines very largely the degree of toleration, and time necessary for the system to become surcharged, as it were, to a condition of chronic phosphor-poisoning.

Such conditions existing, together with an exciting cause or irritant as a disturber of nutrition and the resistive forces naturally found in the gums, periosteum, alveolar process and jaw-bones, are proportionately lessened, together with the vital resistant principle resident in saliva, whereby bacteria become active and destructive. In many cases the normal relations of organic and inorganic matter appear to be altered, a chemical with nutritional change of the bone tissue resulting.

*Read before the Northern Ohio Dental Society, June, 1903.

Character of tissue determines to a great extent the possibility of pathological and destructive changes. Given a lesion of tissue under said conditions, together with possible infection of pyogenic bacteria, and necrosis of a greater or less degree is extremely liable to ensue unless actively and persistently combated.

The general conditions of phosphor-necrosis patients are those presenting a sallow skin, dull, care-worn expression, together with a functional derangement of the alimentary canal, liver and kidneys, markedly increasing as the case progresses in consequence of the great drain which the system undergoes. Considered locally, the symptoms in their inception simulates those of periodontitis, soon denoting, however, an acute ostitis with excruciating pain, spreading about the side of the head, back of neck or down toward the shoulder with extreme swelling and formation of pus. If the superior maxilla is involved, the disease frequently responds to treatment more readily, but often while apparently well checked in its progress, is more liable to break out anew, than in that of the lower, also a greater possibility of complications arising with disastrous terminations. Anatomical relations have a bearing in these cases. When the lower maxilla is attacked the swelling and pain is perceptibly greater with loss of movement during the active stages.

With careful treatment a return of the acute stage with further consequent loss of tissue, seldom occurs, the ramus remaining intact even in the more severe cases, and with nature's efforts to restore tissue and function, which are indeed marvelous in these lower cases, slight deformity results.

The gums have a rather more debased appearance than those in other necrosis, frequently shrinking from the teeth and process, the teeth becoming loose in their sockets.

Pus escapes from the gum margins and by the way of numerous sinuses into the mouth, antrum, nasal cavity, or externally on the face or neck as the case may be. Purulency at times is extremely copious and offensive, the stage and extent of the disease, together with the treatment influencing this somewhat. As a result of the degenerating inflammation in the bony tissue we have a separating of the enveloping periosteum and consequent death of bone. In cases of the upper jaw, the sequestra may be detached in several pieces, while in that of the lower jaw, one or two is the usual rule.

Complete recovery takes place in the great majority of cases,

the duration varying from seven months to two years and a half, although in the more severe cases seven years have been known to have elapsed.

In treating of this subject, as we have in a somewhat hurried and incomplete manner, we are impelled to devote a few words to the subject of, and I might add in justice to, prophylaxis. To become more personal, if we may be allowed, great credit is due The Diamond Match Company, for to them above all others in their noble humanitarian efforts through every possible means of securing factory sanitation with personal hygenic conditions for the betterment of their employes, together with the skilled, conscientious work of Dr. S. D. Stewart, such results were obtained as to demonstrate that prophylaxis applied in a thorough, practical and progressive manner would well nigh eliminate the phospho element of its terrors, thereby relieving all those concerned in that which up to a few years ago was to be reckoned with as an element of constant fear and danger of great magnitude.

While demonstrating the great possibilities of prophylaxis in this particular line, its influences in other directions are interesting and valuable. As pertaining to dentistry proper, its application clearly demonstrates that teeth of sufficient number, comparatively free from deposits or caries, together with firm, healthy gums and membranes and consequent freedom from bacterial invasion of the oral secretions, are its resultants, inducing as it does to better personal conditions with its far-reaching influences, at less expense physicially and financially than would be possible under the usual regime among a class of people naturally very negligent of rules pertaining to dental prophylaxis.

Should we not, as a profession, extend our hearty approval and support to all those who are freely giving of their time and energies to the inception and extension of prophylaxis in its several directions to the end that the results obtained will warrant the public's demands of such measures as tend to their future welfare.

DISCUSSION.

Dr. W. H. Whitslar, Cleveland, O.—I know of no one better qualified than Doctor Knowlton to follow out the study that Doctor Stewart has begun. As the essayist has said and also as

was stated in the discussion, The Diamond Match Factory should be congratulated upon the care they have exercised in the treatment of their employees. The good results of this show us that by cleanliness a great deal of disease can be eliminated. We must consider the susceptibility of people to phosphor-necrosis more than to other kinds of necrosis. Doctor Stewart's theory was this: The poisons which rise into the nostrils are not received through the dental pulp of the teeth, but in a large percentage of cases through inhalation of the fume. We have in some individuals good receptacle for poisons of this class. They are the people who are careless in their habits especially in regard to cleanliness, and who are more susceptible to diseases of all kinds than others of better habits. In speaking of the chemical relations that occur in the blood, when certain gases are present in the blood, and the food taken into the body instead of creating new and good blood, mingles with these poisons and creates more poison or bad blood. If a person is uncleanly in certain parts of the body the blood becomes charged with poison and this mixes with the poisons inhaled and finds lodgment in the bones, producing diseased conditions. We soon find that the peridental membrane will become inflamed, producing ostitis and we have a condition similar to caries. To get at the correct treatment of this disease the match factory owners have taken the right precautions. This is not only a matter of the health of the employes but of dollars and cents to the owners of the factory as it saves them many costly law suits. We have seen the dire results of phosphor-necrosis and fortunately these cases are becoming less and less every year. The condition is very much like the condition in a slow low grade of septicemia. I have here a specimen of necrosed bone given to me by Dr. Stewart before his death.

Doctor Buzzell, Port Clinton, O.—I have always supposed the trouble was taken in through the teeth alone, but if the more reasonable theory is that it is taken in through inhalation it would seem that the air passages would be the first to be attacked. Is the condition found more frequently in the case of mouth breathers than in others?

Doctor Williamson.—The circulation of the blood is so rapid and it carries the poisons so rapidly that there is no opportunity for lodgment of the poisons until they reach the bone.

The poisons may go through the dental pulp, but it is more likely that they are admitted through the mouth by inhalation of the fumes.

Doctor Buzzell.—If it is taken into the system in this way why is it confined to the maxillary bones; why would it not be found in other parts of the body?

Doctor Williamson.—This we do not know. It may be posible that there is something about the maxillary bones that render them more susceptible to this poison than other bones of the body

Dr. J. R. Owens, Cleveland, O.—My judgment would be that phosphor-necrosis attacks the maxilla through some lesion. Possibly the fine particles of phosphorus in these factories comes directly into the system through the teeth.

Dr. L. P. Bethel, Columbus, O.—I have with Doctor Knowlton visited match factories in Oshkosh, Wis., and Barberton, O., and have seen the results of this disease upon the workers in these factories. Before examiners were appointed by the managers there were a great many cases of phosphor-necrosis, but after Doctor Stewart took hold of the work the cases grew less in number. A year ago I went with Doctor Knowlton through the Barberton factory and inspected the mouths of employees and at that time among the 2,000 employees were found only four cases of phosphor-necrosis. The keeping the mouth free from decayed teeth, roots, etc., is made obligatory with these employees. It may be true and probably is that the systems of those working in the fumes of the phosphorus became saturated with it and this may lead to necrosis of the bony parts, but there must be some danger from direct infection, especially when a portion of the alveolar process is exposed. Doctor Knowlton examines the mouths of the employes in these factories about four times a year and if any teeth need filling the employees are so informed and must have them filled, and any particles of calculus irritating the gums are removed at once. Doctor Knowlton obliges the employees to clean the teeth at least once a day. These are the poorer class of people and seldom take the care of their teeth that the better class are at least supposed to do. Although they are exposed to these particles of phosphorus which are irritating yet the constant

care keeps the gums in a fine healthy condition. If this means of prophylaxis does so much for this class of people, where conditions are so unfavorable, what ought a thorough course of treatment, as advocated by Dr. D. D. Smith, to do for patients in a general practice? Prophylaxis is not receiving the attention it deserves from the dental profession.

Dr. H. L. Ambler, Cleveland, O.—I think this Society and this country are to be congratulated on the fact that we have a man who is able to take care of the employees in the match factories. In this country it is a private affair, but if you will go abroad you will find that the matter is of so much importance that it has been taken cognizance of by the government. Five years ago I met Doctor Cunningham in England. He had been making a study of this subject in the match factories of that country, being deputized and paid by the government. The English government also paid him a fee for going to France and other countries and making a study of the condition of the employees in match factories in these countries. I met Doctor Stewart and told him that Doctor Cunningham had this work in charge. He went to see Doctor Cunningham and they had a good many conferences over this matter, comparing notes, methods of treatment, etc. It is certainly very fortunate that we have very few of these cases to deal with. I called Doctor Stewart's attention to the fact that if he went to the Old Museum in Paris he would find a large collection of cases of phosphor-necrosis and he and Doctor Cunningham went there together and made a study of these cases. I believe that a patient can be poisoned by phosphorus either through dental lesion or through breathing the phosphorus. You will find that a great many men are poisoned by copper and by white lead. We have a factory in this city where they make white lead. This factory, recognizing the danger of this poisoning takes every precaution to insure good sanitary conditions for its men. They are furnished with a suit of clothes to put on over their own; they are also compelled to make use of the free baths provided for them. If persons can be poisoned by silver, brass, mercury, copper and lead it seems as if they could be poisoned with phosphorus.

Doctor Taft, Ann Arbor, Mich.—I am gaining information rapidly from the discussion of this subject. It has been inter-

esting to me for a long time. One fortunate thing is that this condition is becoming less and less on account of better acquaintance that has been formed with regard to it by those especially interested and working with it. The study of this subject is certainly of very great interest to the factories referred to here by the different speakers, as to get rid of this condition would be decidedly to their advantage. In studying this subject something can be gained by noticing the influence of other metals as referred to by Professor Ambler. You have all heard of painters' cholera, which is more frequent than phosphor-necrosis, and in working with brass, zinc, and various metals a good many kinds of disturbances are caused in the body. It is well that we take all these things into account and gain all the information we can in regard to the method of treatment to eliminate these influences from the body. The fumes of phosphorus when inhaled are taken into the blood and through the entire system by the red blood corpuscles. There is undoubtedly a susceptibility in the bones of the jaw through the decayed teeth which is not so manifestly susceptible elsewhere in the body. What shall be the treatment? Elimination. Get it out of the body just as you would any other poison. You know what the eliminating organs of the body are—the skin, the liver, kidneys and digestive tract. Stimulate all these into proper activity to eliminate the material from the body. Stimulation of the skin would be especially beneficial. Frequent bathing is certainly necessary in the treatment and should be adopted by all workers along this line. I am rejoiced to know, from what Doctor Bethel has said, that such progress is being made that now only a small percentage of this disease is found.

Doctor Knowlton.—There are a few points on which I would like to make an explanation. I did not touch upon the treatment at all, for there is so much to be said on the subject. One point brought up was, why does this disease affect the maxillary bones and not the other bones of the body? There may be two or three reasons for this. There may be a selective tendency for the phosphorus to effect the bones of the face. We have exposure of the bones of the face that we do not have in other parts of the body. A lesion is necessary to develop phosphor-necrosis. The blood is poisoned either by absorption or inhalation. The blood is drawn to the affected parts. The

oxides are deposited in this space until probably the circulation is entirely cut off from the changed conditions. This may go on for years.

DR. H. L. AMBLER, Cleveland, O.—Are not some people immune from this disease the same as they are immune from other diseases?

DOCTOR KNOWLTON.—There may be susceptibility to this disease as well as to other diseases and some may be immune from it.

Are mouth breathers affected more than others?

DOCTOR KNOWLTON.—No. The fumes can be taken in through the nostrils or through the mouth. If there is a decayed tooth there will be irritation and congestion and consequently a susceptibility to the disease. I do not think as a rule the dental profession pays sufficient attention to the general care of the mouth as well as the mechanical conditions which they take care of. The condition of the gums and mucous membrane all have an influence.

DR. G. B. WILLIAMSON, Akron, O.—What is the percentage of cases in the upper and lower jaw?

DOCTOR KNOWLTON.—Eight upper to ten lower. The circulation of the upper is naturally a little better and not so easily cut off by swelling and irritation of different kinds.

CLINICS AT NEBRASKA STATE DENTAL SOCIETY.

CRYSTAL FIBRE GOLD.

DR. W. A. IVORY, WAYNE, NEB.

I have had experience with this material, Crystal Fibre Gold, about seven months. So far as I have experimented it has filled the place for which it is intended. First, being a material that is easily inserted, I think it is liable to be abused. Material works very easy, best packed with oval faced plugs and has no tendency whatever to rock, and is always a good base for any gold filling. But I will pass around the tooth. This enamel is very thin, and this material is packed close to the enamel and has been filled with

gold. There has been a veneering around this material and that has been shaved off until it was down to this alloy. This tooth has been two months in saliva, shows no discoloration around the material. I have put in several fillings, using this material, with very good success.

GOLD FILLING IN BICUSPID, USING AURA-PERCHA.

DR. W. T. SMITH, GENEVA, NEB.

Discussion opened by Dr. T. J. Hatfield: I saw the clinic, or a part of it. It simply represented a material gutta-percha that was used, as I understand it, to locate the first piece of gold, to hold it in place. It is made in very small particles, one-fourth size the head of a pin, smaller than that even. You pick up a piece of gold, touch it to the aura-percha, then heat it over the lamp, and the Doctor instructed us to be very careful not to get it too warm or it would destroy the working qualities. One of the essential points is to have a very small piece of aura-percha so it will not spread. The Doctor did not recommend it as a retainer, but simply as a convenience, and to hold the gold in position while the filling is being started. I am of the opinion that it has some very favorable features, but I think it is a thing that when we go to use it we ought to be very careful and not get the idea into our heads that it is for the purpose of making the filling stay there. Don't think that is what it is intended for at all.

Doctor Cross said: I witnessed the Doctor's clinic and also his explanation to same. He said that the cavity should not have pits or grooves, but the same time the cavity should be made retentive, the same as for an ordinary alloy filling. The principal thing I can see would be the non-conductivity. In this connection aura-percha would be a good thing.

COHESIVENESS AND ADAPTABILITY OF WATT'S CRYSTAL GOLD.

BY DOCTOR SMITH.

Doctor Watt said it was a little unfair that he should open this discussion, but he said he had found nothing to equal cohesiveness and adaptability of Watt's Crystal Gold. His method is to build

these fillings in under good retentions by hand or mallet pressure. Both are very successful. Of course this being a table clinic there is nothing much to report upon. I am heartily in favor of it. Think good results are bound to come as the Doctor demonstrates.

IMMEDIATE REMOVAL OF LIVE PULP BY PAINLESS METHOD.

BY W. CLYDE DAVIS, LINCOLN, NEB.

Doctor Ross opened the discussion: I witnessed the operation. Considerable time was given to this operation. By watching the patient closely, I noticed he gave no sign or symptoms of suffering any pain whatever. The Doctor consumed more time than I expected to see in that operation, but it certainly was a very successful one. There seemed to be no hemorrhage, and it seemed to me a very commendable method. It seems to be a much better method than the application of arsenic, which has been my method of extirpating the pulp.

TEETH WITHOUT ENAMEL.

BY DR. M. E. VANCE.

Doctor Ames, of Chicago, took up this subject and said in part: I had the opportunity of examining the teeth of this child incidentally this morning, at the request of Doctor Vance. I found the condition described, seeming to have very defective enamel, giving a condition to the surface which was so slightly protected that the child could not breath through her teeth without experiencing pain. I was asked this morning by another gentleman to suggest a method for protecting this, and I suggested the use of sulphuric acid and chloride of zinc, which do some good, but is necessarily very painful in such cases. Apply a thin layer of cement taking the chances of that hardening, and upon that impression trim off the slightly raised portions, then apply cement to the cavity, properly dried and bring pressure upon that and in that way you can mix the cement getting its maximum density. In this case there were some of those denuded cases devoid of enamel on the back teeth. I suggested in using this method it might be desirable with tin or silver, to leave the metal upon the cement as an extra precaution.

RESUME OF TECHNICAL MICROSCOPY.*

BY DR. ELIZABETH C. FIELD, LINCOLN, NEB.

The progress made in dentistry during the last quarter of a century and the high degree of perfection reached in the manipulation and skill with which mechanical instruments are used has been gratifying in the extreme. But with all the enlightenment we have, it is nevertheless true that there is a continual and steady deterioration in the quality of teeth. Have we not perhaps gained mechanical skill to the detriment of the higher scientific prevention standard? Dentistry as a profession should lead to as proficient work in all of its branches as possible. Should we not all be investigators after the true condition and the manner by which the present ravages can be thwarted? We throw aside the microscope and its adjuncts as soon as we leave our Alma Mater. Would it not be better to continue in those researches which may in time lead us to the great Truth?

The great progress of medical education in America during the past twenty years is marked chiefly by the increased attention given to the scientific branches which form the basis of all medical training and practice. In no respect is this progress more obvious than in the recognition of the value of the microscope as a medical instrument upon which, in its manifold applications to anatomy, physiology, bacteriology, pathology, and sanitary science the advance of medicine depends to a far greater degree than upon any other instrument or apparatus. As dentistry properly is a subdivision of medicine it does not seem inopportune to briefly give some of the details regarding the preservation and manipulation of specimens destined for such scientific work.

PREPARATION OF TISSUES.

Very few organs of the animal body are of a structure suitable for microscopic examination without special preparation. They must possess a certain degree of transparency, which is attained either by separating the organs into their elements or by cutting them into thin sections—that is either by isolating or by sectioning. Further, very few organs possess a consistency that without treatment allows of the cutting of sufficiently thin sections; they

*Read before the Nebraska State Dental Society, 1903.

are either too soft in which case they must be hardened, or too hard in which case they must be decalcified. But fresh objects can neither be hardened nor decalcified without injury to their structure; both processes must be preceded by treatment which kills the structural elements very rapidly and at the same time preserves their natural form. This procedure is called fixation. Usually the preparation of thin sections is possible only after fixation and hardening, followed in some cases by decalcification of the object. The sections require too, further treatment; they may be rendered transparent by means of a clearing media or they may be stained before being made transparent. The staining materials are invaluable adjuncts to microscopy.

In selecting the proper material, secure the specimen as fresh as possible, and it is advisable to place it while still warm in the fixing fluid. Many different fixing solutions are used but one of the most practical is alcohol. Ninety-five per cent alcohol even ninety per cent will almost always shrivel the object. A three per cent or four per cent solution of formaldehyde is also much used, but others such as chromic acid, nitric acid, osmic acid, etc., have their especial adaptability to certain tissues. Except when alcohol is used, all the fixing methods necessitate a supplementary process of hardening. The best hardening medium is alcohol in ascending degrees of strength. Here, as in all such work, the rule is to use an abundance of fluid and to change it if it become turbid or colored. The exact application is as follows: After the object has been fixed in one of the previously enumerated fluids and washed in water, it is placed under exclusion of daylight for twelve hours in fifty per cent alcohol, then transferred for the same period to seventy per cent alcohol and at the expiration of this time to ninety per cent alcohol in which the hardening is completed. In this alcohol the specimen may remain indefinitely before the final preparation.

SECTIONING AND STAINING.

When desiring to section the specimen a sharp razor should be used and the blade moistened with alcohol—not water. If the object to be sectioned is too small to be held with the fingers, it may be embedded by placing the object in a cleft made in a piece of hardened liver.

If the specimen is to be stained in bulk one of the best nuclear

stains is borax-carmine. The fixed and hardened objects are placed in the solution for twenty-four hours or more, then transferred to acid-alcohol and washed till the alcohol does not take the stain. The object is then transferred to ninety per cent alcohol and run up through absolute alcohol when it is ready for cutting.

One of the most commonly used double stains is eosin and hematoxylin. Here the specimen is not used in toto but in sections. The eosin delineates the margins of the cells by giving them a reddish tinge while the hematoxylin is particularly adapted for nuclear work and it gives a bluish color to those tissues susceptible to it.

EXAMINING SPECIMENS.

Each section should now be examined without a cover glass with a low powered microscope, in order to ascertain its usefulness. If it be good it is placed for from one to two minutes in a watch-glass containing absolute alcohol, then for the same length of time in oil of bergamont or oil of cedar. From this it is transferred to xylol for a few seconds and then placed back on the slide. The excess of xylol may be removed with filter paper and the prepared specimen covered with Canada balsam diluted with xylol. Then cover with a proper cover-glass.

The results obtained by this method, if properly executed, will be admirable and such as to allow of the deepest and most thorough scientific investigation.

By those who have become proficient with the razor, or have a microtome, fresh objects may be sectioned by freezing with ether. Place one drop of a seventy-five per cent salt solution on the slide and put the sectioned specimen in it. Place in the cover-glass. If the object requires no further treatment, the cover-glass should be sealed with paraffin to prevent evaporation. The advantages of cutting specimens after this manner is the rapidity with which they can be severed and the influence of the reagents can be studied directly under the microscope.

The aim of this paper has been to present some few facts from a small cover of the domain of the science of microscopy in such form as will be plain and useful to those interested.

PRESIDENT'S ADDRESS.*

BY H. J. COLE, D. D. S., NORFOLK, NEBRASKA.

"There are men and classes of men that stand above the common herd; the soldier, the sailor, and the shepherd not infrequently; the artist rarely, rarer still the clergyman, the physician almost as a rule. He is the flower of our civilization, and when that stage of man is done with, and only remembered to be marveled at in history, he will be thought to have shared as little as any in the defects of the period, and most notably exhibited the virtues of the race. Generosity he has, such as is possible to those who practice an art, never to those who drive a trade; discretion tested by a hundred secrets; tact tried in a thousand embarrassments; and what are more important, Herculean cheerfulness and courage. So it is that he brings light and cheer into the sick-room, and often enough, though not as often as he would like, brings healing."

Such is the description of the physician by Robert Louis Stevenson, and it is the best characterization I have ever read, and as ours is a branch of that great healing art, I have thought, although idealistic, that it is a standard worthy of our best endeavor to attain. A friend who has spent some time in Europe told me that members of our profession on the continent were such broad-minded, cultured gentlemen, that they did more to stamp our principles of government and civilization upon the people of those countries than any other class of foreigners.

Our laudable ambition should ever be upward and forward. Growth is the word. We cannot become great or attain distinction by merely wishing it; neither can we become famous at a bound; were it so nearly all would take the leap. So that whatever we are or shall be as men in our different communities, is or will be gained only by daily striving for it. Nearly everything our current literature contains is how to do things, and the burden of all the lectures in our colleges is preparation of cavities, manipulation of filling materials, construction of artificial dentures, building bridges, correcting irregularities, etc., which is all well and good, for that is the principal object of the student's attendance, but certainly more attention should be given to correcting lapses

*Read before the Nebraska State Dental Society, 1903.

from virtue, to preparation for living, to bridging abysses in the imperfect characters of so many of the great student body that is knocking for admission at the door of our profession, and to the construction of something that will abide when all else fails—an honest and upright character. When more attention is given to the character of the would-be student before he is allowed to matriculate, when the management of our great institutions are more careful in the selection of their teaching force (because a pure stream cannot flow from an impure fountain), then and not till then will the men coming into our profession be of a high standard for which we are pleading.

THE DENTIST'S PERSONALITY.

We note again the readiness with which the dentist impresses his personality not only upon the community in which he lives, the society in which he moves, but also upon his work. Show me the man who is careless about his financial obligations, slovenly about his person or surroundings, and I will show you one who will construct an ill-fitting and ill-finished bridge, or fill a pulpless tooth without attempting to fill the pulp canal.

THE DENTIST SHOULD READ GOOD LITERATURE.

Again, he should be a reader of good literature, that he may become familiar with the records and doings of the men and women of the past who have had to do with shaping the policy and life of the world not only that he may be able to talk intelligently upon those subjects, but that he may be able to incorporate into the warp and woof of his being some of their life and energy. In no other way is it possible to become broad-minded and attain that degree of culture that the public have a right to and should exact from us. Also, he should be conscientious in all he does, giving the very best service in all he undertakes; if he does he is a real "angel of mercy," because in no calling is there greater opportunity for rendering real service to fellow-man than in our own. That is the chief aim of all true men and women. The highest type of manhood the world has ever known was one of service. That is life itself.

THE DENTIST MUST BE SOCIAL.

He must of necessity, also, be a social being. Every one needs some relaxation after the racking brain and muscular work of

each day. I do not mean when I recommend society that we as professional men shall follow all the frivolities of fashionable life. We cannot afford the time nor expenditure necessary to meet such demands. But I mean the society of good, sensible people, who recognize the fact that night was made for sleep. This class is the thinking class, the reading class, the intelligent class, that make men sound, sweet, and strong. These are the people who move the world and hold it in equilibrium. This circle comprises the busy people who are working in the churches in reforms of all kinds, in the sciences and arts, and the broad fields of literature and education. They are the people who are living to some purpose, and in this class I recommend you to find your friends. Is it asking too much to say that he should be truthful? Certainly not, because these other qualifications that I have just mentioned are utterly impossible unless he has this also. Dr. O. W. Holmes said, "Sin has many tools, but a lie is a handle that fits them all." Aside from its moral effect truth pays in dollars and cents.

ADVICE TO YOUNG MEN.

To young men just entering the profession, I would impress this one more qualification upon your minds, that under no circumstances should any one be mean and stingy, but you should by frugal and industrious habits, lay in store for your own and family's needs, when your hands can no longer provide. You should at the very beginning of your professional career, or at least as soon as you can earn twenty dollars, open a bank account, and have very great care at all times that that account is not overdrawn. Live within your income and conduct the business affairs of your practice in such a manner that from the beginning you will have established a creditable financial standing in your community. And, in conclusion, he should be pure in thought and in deed, so that he is able to stand the test, and after having passed through the fiery furnace of public opinion there will not even be the smell of fire upon his garments. These qualifications of manhood that I have referred to so briefly are, it seems to me, some of the more important ones that every dentist should possess, if he expects to measure near the standard of the characterization which Stevenson ascribes to the physician.

> Give us men!
> Strong and stalwart ones;
> Men whom highest hope inspires,

Men whom purest honor fires,
Men who trample self beneath them,
Men who make their country wreathe them
As her noble sons,
Worthy of their sires;
Men who never shame their mothers,
Men who never fail their brothers,
True, however false are others.
Give us men, I say again,
Give us men!

LEUCOPLAKIA AND ITS RELATION TO CARCINOMA.*

BY DR. J. M. BARNES, ALBION, NEB.

Leucoplakia is from the Greek, and means—*leuco,* white; *plakis,* surface.

Synonyms.—The disease is variously known as leucoplakia, psoriasis linguæ, zona, smoker's patch, ichthyosis, etc.

Definition.—A disease of the mucous membrane of the buccal cavity, in the form of a chronic superficial inflammation affecting the tongue, palate, cheeks and gums; is characterized by one or more rounded or irregularly shaped or diffused, pearly-white or bluish-white plaques or patches, in some cases small, in other covering the dorsum of the tongue, the cheeks from the angle of the mouth backward sometimes as for as the fauces, and the palate or entire buccal surface of the gums. The terms "leucoplakia buccalis," "leucoplakia linguæ" and "leucoplakia gingivæ" have been applied to the various forms to designate the location of the disease.

Varieties.—Two forms of leucoplakia are found in the human mouth, the milky opaline patches or plaques opalinus represented by the mucous patch of the second stage of syphilis and the non-syphilitic smooth, pearly white patches which were termed "leucoplakia" by Schwimmer and "leucoma" by Hutchinson. A warty variety has been described by Hulke and termed ichthyosis linguæ.

The plaques opalines or the mucous patches of secondary syphilis are grayish white and curdy in appearance, resembling the corrosion by the application of silver nitrate to mucous mem-

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*Read before the Nebraska State Dental Society, 1903.

brane. Elevation of the patch, watery fluid and tending to ulceration and pain.

Leucoplakia plaques are thin, shiny, pearly white or bluish white in color, sometimes with a yellowish tinge but this may be due, in the opinion of Butlin, to the stain of tobacco or other extraneous substance. Patches are not elevated except in the watery form.

In ichthyosis there is no secretion; it is not painful except in the advanced stage, and does not ulcerate until the disease has taken on a malignant form.

To true leucoma or leucoplakia Marshall calls especial attention for the following reasons:

1. It is an exceedingly dangerous affection, often being a forerunner of carcinoma.

2. It is a disease which from its innocent appearance and painless character of its earlier stages is seldom recognized until the disease has progressed to a stage which renders a favorable prognosis exceedingly doubtful.

3. The disease seems from personal observation to be on the increase.

4. The dental surgeon from the very nature of his specialty is in a position to see and recognize the disease in its earliest stages and to warn the patient of his condition before it has progressed so far as to prove a menace to life.

In the earlier stages before this disease becomes troublesome, it is much more likely to be noticed by the observing dentist, because of his opportunity to come in contact with it. Therefore he should be able to recognize the disease at a glance, and advise the patient of the necessity of consulting a surgeon or institute a treatment to arrest the growth, or for its complete removal.

Etiology.—The etiology of leucoplakia is as yet an unsettled question. Opinions still differ largely among the best pathologists. It was first supposed to be some form of skin disease, like hives, by some writers. Others thought it to be a local manifestation of psoriasis. Many have considered it a chronic inflammation of the mucous membrane of the mouth due to syphilis, and still others contend that it is a distinct affection resulting from local inflammation caused by chewing and smoking tobacco, alco-

hols, peppers, caustics, and other irritants. However, most modern writers look upon leucoplakia as an entirely distinct affection, having no association with psoriasis in any of its forms.

Hyde says: "Psoriasis is not known to affect the mucous surface. The lesions of so-called psoriasis linguæ are those of leucoplakia buccalis, of smoker's patches, of syphilitic disease of the mouth or of flat epithelioma.

Predisposing Causes.—Butlin and Debove agree that there is in most patients a predisposition to the disease. Debove says: "I suspect that the mucous membrane of the tongue in these subjects is from the first less thick and stable, and more easily irritated than in the majority of persons, as some persons are known to have delicate skins, easily inflamed and prone to eruptions, and as some of those persons develop eruptions of the skin which are very chronic and difficult to heal, so I believe other people have tongues whose mucous membrane is abnormally delicate, prone to chronic inflammation and difficult to cure when disease has been excited." Rheumatic and gouty diathesis have been suggested as predisposing causes, but evidence seems insufficient to consider these as etiological factors. Age and sex are important predisposing causes. It is rarely seen in persons under twenty years of age, and rarely begins in persons over sixty years of age. Women seem to be almost entirely exempt. Doctor Marshall reports twelve cases, of which eleven were men.

Exciting Causes.—Irritation produced by the constant use of tobacco, both smoking and chewing, the habitual use of undiluted spiritous liquors, the eating of highly spiced foods and the drinking of hot fluids. The irritation produced by sharp and roughened carious teeth, or accumulations of salivary calculus and dentures which are rough and ill-fitting, irritating to the mucous membrane. Park is of the opinion that leucoplakia is due often to syphilis and says: "These late and recurring lesions (syphilitic mucous patches) lose their moist character and become quite smooth, shiny, of a bluish white color, and mark a condition known as leucokeratosis."

Pathology.—Upon examination of the histologic structure of the leucomatous patches, a marked change in the character of the papillary layer of the tongue, the mucous membrane of the lips and the cheeks, and the cells of the epidermis will be noticed.

There is found keratosis with marked thickening of the superficial layers, thickening of the deeper strata and downgrowth of the epithelial processes. The papillæ of the tongue may be very much atrophied, and in places almost entirely obliterated, and the subepithelial tissue showing inflammatory changes and infiltration of round cells. The epidermal layer has taken on a horny character more like that of the skin. This is true also of the epidermal layer in leucoplakia of the mucous membrane of the lips and cheeks. Finally, sclerotic changes may take place in the submucous and deeper layers.

In the advanced stages of the disease true cell nests are found, which establishes the fact of carcinomatous degeneration. The question is still disputed as to the manner in which the cell nests are formed, but in carcinoma of the tongue and oral mucous membrane following leucoplakia it would seem probable that the cell nests were developed from traumatic inclusions of epithelial cells following the repeated ulceration and heating of the leucomatous patches.

Fordyce's examinations in cases of epitheliomatous development showed the new growth to belong to the tubular epithelioma with but little if any disposition to the formation of horny tissue.

Herdingsfeld, in a case of long duration, showing as yet apparently no degenerative changes, found the leucoplakia condition to be distinctly pre-epitheliomatous in character—marked proliferation and downgrowth of the epidermis and areas of degeneration with a nest-like arrangement of the epithelium; a good wall of connective tissue separated it from underlying structures.

Symptoms and Diagnosis.—The first sign of a leucoplakia patch is a slightly increased redness, sometimes with a bluish tinge, often requiring close inspection to recognize its presence. In this stage there may be sensitiveness to hot and acid foods. This stage may last weeks or even months and frequently is unobserved, the first sign recognized being the white or opaline spot into which it evolves. This consists of a rounded or irregular, circumscribed or diffuse, smooth white or pearly white patch. These patches appear in varying numbers from one to several upon the mucous membrane of the tongue, palate, cheeks, gums or lips, and often coalesce to form larger ones.

In their early stage they are not elevated from the surrounding tissue and appear as smooth glistening patches and range in size

from tiny, irregularly outlined spots, to large plaques the size of a silver half-dollar or larger. They are usually not sensitive at first, and for this reason may exist for some time without knowledge of the patient. Many cases never progress beyond this stage, while others may increase slowly in size and density of color, the plaques being slightly raised, the surface hard, cornified and roughened. With this stage, especially when the disease is located upon the dorsum of the tongue, the patient will complain of persistent dryness of parts and inability to use the tongue with comfort except by frequent moistening.

It is not unusual to find the affected surface as well as the other parts of the tongue traversed to a variable degree by superficial or deep transverse and longitudinal grooves. These are the so-called smoker's patches, although this term is likewise applied to the more advanced types also. Later fissures appear in the tongue and there is developed a smarting, burning sensation as though the parts had been scalded. These sensations are increased by alcoholic liquors, fermented beverages, acid fruits, highly seasoned or very hot food or drinks, chewing and smoking tobacco, which may render the partaking of food a great discomfort.

With this condition, some portion of the plaque may peel off or slough out from time to time, having a reddened or raw surface, which is very sensitive. This may be followed by ulceration and degenerative changes, developing in the formation of a carcinoma. When the disease occurs on the tongue, warty growths may appear in the plaques which show a decided tendency to take on a rapid form of carcinomatous degeneration.

The region the most commonly the seat of leucoplakia is the tongue, especially on its dorsal surface anteriorly and laterally, but it may occur on any or all sections of this organ and involve a portion or the greater part of it. The inside of the cheek is another favorite but less frequent situation, and the inner aspect of the lips may be its site.

Differential Diagnosis.—Leucoplakia may be confused with the mucous plaques of secondary syphilis and epithelioma. In the early stages this mistake is not likely, as there is in the mucous patch no tendency to epithelial hardening, but, on the contrary, it is usually soft, with the surface film generally easily removed and a disposition to superficial abrasion, and not infrequently to more or less ulcerative action. The mucous patch forms rapidly and is usually of short duration, and other symptoms of syphilis are

likely to be found. A course of treatment with iodide of mercury or iodide of potassium will clear up the diagnosis of syphilis, and in epithelioma the microscope would be necessary for a positive diagnosis.

Prognosis.—This depends upon the predisposition or tendency of the disease to take on malignant degenerative changes, as there is not the least doubt that such a predisposition exists.

Senn, in speaking of carcinoma of the mouth, says: "Carcinoma of the mucous membrane of the cheek is sometimes preceded by a patch of leucoplakia. The influence of chronic irritation in producing carcinoma is well shown in carcinoma in this locality, as the tumor very often corresponds in location with the crowns of prominent upper and lower molar teeth."

In the "American Text-Book of Surgery" we find this statement: "Many cases of cancer of the tongue are preceded by leucoma, the so-called psoriasis of the tongue."

Sutton says: "In a fair proportion of cases (twenty per cent.) epithelioma of the tongue is preceded by changes known as leucoplakia and ichthyosis, and they are frequently referred to as precancerous conditions. In case of the cheek epithelioma is sometimes preceded by a patch of leucoplakia. The disease often starts close to the angle of the mouth and extends backward into the cheek, or it begins in the fold of the mucous membrane between the gum and the cheek, and occasionally it starts in the center of the cheek, often on a level with the meeting place of the crowns of the upper and lower molar teeth."

Butlin states that out of eighty cases of cancer of the tongue, sixteen were preceded by leucoma.

Treatment.—When well developed, leucoplakia is usually very rebellious to treatment, and sometimes shows a tendency to carcinomatous degeneration, therefore the measures employed would be palliation and heroic operations. Cases giving a clear history of syphilitic infection may be benefited by a course of anti-syphilitic treatment, but up to the present no drug has been discovered which, acting constitutionally, has any beneficial effect upon the progress of leucoplakia. Preventive measures which may be instituted are the removal of all forms of irritation, both chronic and mechanic. Patients should avoid any form of alcohol, acids, highly spiced and very hot foods or drinks, and tobacco, both

chewing and smoking, as these stimulate the progress of the disease.

The mechanical irritants common in the mouth are usually associated with the teeth or with artificial dentures, as carious cavities, jagged roots, salivary calculus, fractured teeth, or rough or ill-fitting plates. These irritations should be corrected by filling the cavities, extracting the roots, treatment of the fractured teeth, removing the calculus and polishing the surfaces of the teeth, and the irritating artificial dentures should be removed altogether or be replaced by dentures free from these objections.

Local Treatment.—Nicholson recommends a trial in tinct. ferri perchlorid, twenty-five to thirty minims, applied to the patch three times *per diem,* as it seemed to give relief from the burning pain and improve the pithelium.

Rosenberger recommends the local application of pure balsam of Peru, painted upon the patches with a brush, allowing it to remain in contact three to five minutes. He advises this to be applied three t. i. d. Vidal used a twenty per cent. solution of chemically pure chromic acid, applied to the patches. Glycerite of tannin every day or two may be beneficial.

Rosenberger uses a twenty per cent. solution of iodide of potassium painted on the plaques.

Palliative Treatment.—This is the use of alkaline mouthwashes. Butlin recommends potassium bicarbonate fifteen to twenty grains in 1 ounce water, in mild cases; or bicarbonate of soda or boric acid in severe cases. Glycothymoline and aqua calcis is also a good alkaline lotion.

Internal Treatment.—This consists in keeping the bowels open, and the use of general tonics, when indicated.

Surgical Treatment.—When the disease assumes a malignant character, radical operation is the only safe method, and thorough extirpation should be done at the earliest possible moment. Temporizing by the use of caustics in this stage is useless, for the reason that the irritation seems to stimulate the malignant degeneration.

Butlin says: "One general rule holds good for all cases of leucoma—namely, not to use caustics. Whatever danger there may be of the development of carcinoma is certainly increased by the employment of nitrate of silver and other caustics.

Conclusions.—Leucoplakia, on account of the fact that it may terminate in malignant degeneration, is a dangerous affection.

Leucoplakia, being a disease of the oral mucous membrane, very often first comes under the observation of the dentist, who from the nature of his specialty should be able to recognize the disease and impress upon the patient the necessity of early institution of treatment tending to arrest further development of the affection.

In presenting this subject for the consideration of the society it is not my purpose to bring out an original paper on "Leucoplakia," but to mention a disease which is of interest to us as dentists from the standpoint of diagnosis and in some cases treatment.

Although the disease is not very frequently seen, still the fact that it does exist, and may terminate in a malignant growth, should be sufficient for us to give the subject some thought.

In writing this paper I have referred principally to Marshall's "Surgical Diseases" and "Injuries of the Face, Mouth and Jaws," and to Stelwagen's "Diseases of the Skin."

EPULIS.*

BY DR. CLYDE DAVIS, LINCOLN, NEB.

Epulis is an atypical cell proliferation, from a matrix of embryonic tissue of post natal origin, arising from the pericementum, or periosteum near its junction with that membrane. Histologically, "epulis" is a recurrent malignant tumor, a sarcoma, fibrous at first, but with distinctive myeloid tendencies in its latter stages.

Virchow recognized two forms: The hard and the soft, the character of the former being due to the predominance of fibrous tissues and that of the latter to its vascularity. It would necessarily follow that in the latter we find a greater tendency to malignance.

Microscopically "epulis" differs little from other sarcomas, being composed of round, spindle shaped, and giant cells. Yet there is a *great* difference in the appearance of sections from different tumors of the same class, owing to the varying amount of fibrous tissues and the relation in quantity of the different cells which en-

*Read before the Nebraska State Dental Society, 1903.

ter into their composition, which difference is also manifest with each individual tumor in its successive stages.

A section from a case of "epulis" which is of recent manifestation will show little variance from one made from a hypertrophied peridental membrane, while a section from the same tumor, in its last stages, will in no way resemble that tissue, showing a distinctive malignant type.

ETIOLOGY.

The etiology of "epulis" of a necessity is two-fold; that is, if it is to be classified as sarcoma.

1st. There must be present within the tissue a matrix of embryonic fibroblasts.

2nd. There must come an irritant, to stimulate the latent energy, of cell proliferation in this embryonic tissue. Some pathologist would attempt to show, that "epulis" is benign, which would seem true in its initial stages, hence not from embryonic tissue, but all are agreed that it ends in a myeloid sarcoma if allowed growth. If this last be true then "epulis" is malignant, and of post natal origin; else it with all other sarcomas, and members of the cancer family are created and the result of conditions after birth, are in no way embryonic, which cannot be the case.

Those irritants which enter into its etiology are simple enough and only such, in the absence of the embryonic tissue as the predisposing cause reparative hyperemias, hypertrophies, or tumifaction, all of which are most benign.

Chief among these are the continued mechanical irritation of rough edges of cavities in or roots of, teeth overhanging fillings, at the gingivæ, deposits of calculus, traumatic injuries and chronic inflammatory conditions, any of which may be the exciting cause while the presence of the embryonic tissue is the predisposing cause both of which must operate to result in "epulis."

With reference to the semiology of "epulis," in its earlier stages nothing seems to be pathognomonic, while in the advanced and later stages, the symptoms are marked. The course of the disease is marked by an almost entire absence of pain. In the hard variety it resembles in every way a simple bone, periosteal or peridental tumor, and of such slow growth as to almost class them as benign, as the usual life of man is not long enough to reach this stage of malignance. In the soft variety the symptoms are differ-

ent, at first it resembles a simple tumefaction of the peridental membrane, but as it developes its changing color and tendency to hemorrhage upon the slightest touch are marked symptoms. And as its true sarcomatous nature begins to show up, its surface breaks down, giving off the characteristic odor, and the hard bone like cicatricial tissue base, makes its appearance.

THE SOFT VARIETY.

In the soft variety the color is first light pink, not unlike the mucous membrane surrounding it. This, however, soon changes to a brighter red. The surface becomes uneven as a strawberry, which it sometimes resembles. Following this the hue darkens to one of a deep red, and in some instances to a brown. At this time the surface begins to break down and its true color is obscured by a dirty white film, which collects very rapidly upon its surface, whereas the color beneath is almost a black due to a characteristic pigment deposit. The tooth or teeth from whose sockets it arises becomes much loosened and elevated in their sockets and appear to be resting upon rubber-like cushions, and are finally, literally exfoliated. The odor which sets in as the tissues begin to break down can only be described as "carron like" and is most nauseating, persistent and ever present.

Its clinical history is that there is noticed growing close to a tooth at its gingival margin first seemingly a hypertrophy, then a tumor, and if allowed growth from two to five years, will suffice to present a fully developed sarcoma generally myeloid in character.

Treatment is complete and radical removal, the earlier the better. In their incipiency they seldom recur and are not frequently metistatic, however, in their latter stages a much larger per cent. recur in the socket of another tooth, not previously giving evidence of affection.

Those composed of the round cells are the most malignant, while the giant cells are the most operable.

CORRESPONDENCE

WHAT IS THE BEST METHOD OF REMOVING IRON STAINS FROM THE TEETH?

I wish to get the best method for removing iron stains where the tooth is alive and you do not desire to devitalize same. I have tried and seen H_2O_2—25 per cent strength used with hot air and instruments but the results are not gratifying. I am in hopes something better may now be known to the dental profession.

Trinidad, Colo. DR. N. N. WYCOFF.

WHAT CAUSED THE TROUBLE?

I noticed an interesting and not uncommon case under Correspondence in the December SUMMARY.

With the hypothesis given, it is as difficult to determine "what caused the trouble," as it is to prescribe a mode of procedure in orthodontia from the examination of plaster casts.

As to the parentage, Norwegian, we see the patient, a fair golden-haired damsel, a picture of health, and twenty.

We imagine a pink and white complexion, teeth slightly yellow, above medium size, and well formed.

If in proper position and the occlusion has not been altered by extraction or filling, we can picture her masticating almost entirely upon the left side of the mouth, as we find two cavities on the right. Mayhap patient is cutting a right upper third molar, causing complication upon that side.

The writer says that the cavities were "small" and "normally sensitive." Perhaps patient had suffered shocks from sweets and thermal changes from the inception of decay until pulp congestion and nodules were present, and filling but exaggerated the condition, *unless* a non-conductor was placed between the metal

filling and the pulp. He does not give us his *modus operandi.* of filling. Perhaps an electrolytic current was established between the gold and the alloy, through the medium of a slightly acid saliva.

Perhaps the pulp of the bicuspid had undergone death by slow torture before being treated.

In the case of the incisor it is self-evident that its pulpal irritation was sufficient for it to succumb and an abscess to follow.

As to the treatment of the abscess, whether blind or fistulous, the idiosyncrasy of drugs must be recognized, and if one remedy did not fit the case after a sixty-days' trial, other remedies should have been resorted to.

These are cases that give life to a journal, set us to thinking and are fit food for thought.

Neillsville, Wis. LESLIE E. PITCHER.

DID BAD TEETH CAUSE PARALYSIS?

Some time last July Mr. G. came to me for treatment. He was suffering with severe pains in the head and face, the cause of which seemed to center in the upper second bicuspid and upper first molar, which I found upon examination to be covered with tartar. The rest of the teeth being in the same condition, with badly inflamed gums. I extracted them as the only remedy left, for they had gone too far to undertake to treat. He called again in about a week, and said that he came near bleeding to death during that night, but had not been bothered since, but the other side of his face and head was bothering him in the same way, and would in a short time have to have the teeth on that side taken out. In about two weeks he came to my office with the left side of his face partially paralyzed, being unable to close his left eye or use the left side of his mouth. Upon examination the left upper first bicuspid was very sensitive. After consulting with his physician it was decided that the cause was the left upper bicuspid and the left lower first molar and in the presence of his physician they were extracted. He began to improve at once. Did those teeth cause the condition or not, and if so, how? His other teeth are in a bad condition and will all have to be taken out.

Shoshone, Idaho. J. M. ROGERS.

SUGGESTIONS

LINING OF RUBBER DENTURES WITH ALUMINUM.

Clinton W. LaSalle, Rochester, N. Y.

For the solvent he used chloroform, one part, carbon disulphid, one part, and naphtha one part; for powder, the aluminum used by plumbers in bronzing metal work.

His directions were to pack the case as usual, using the flask-press, and from time to time the wet cloth to test the pack. An excess of rubber was fatal to the best results. The flask should be made to come together under gentle pressure.

The palatal surface of the denture should be made of as large pieces as possible. This gave a smooth surface and prevented penetration of the mass by the lining, an event certain to mar the appearance of the palatal surface of the denture.

The packing completed, he made a swab of cotton wound on a wood toothpick, dipped this into the solvent and applied it to the palatal surface of the pack, dusted a small quantity of the powder on this moistened surface and rubbed it in with the swab again saturated with the solvent. This procedure was continued till the surface refused to hold more. A new swab was then made, kept and used dry, and with it dry aluminum applied to the model.

The flask was then closed and bolted and the case vulcanized. With vulcanization completed the flask was allowed to become "stone cold" before opening. Without this precaution the lining would adhere in part to the model.

Soapsuds and a tooth-brush gave the desired finish.

This technique produced a lining at one with the plate, the solvent making a vulcanized cement in which the metal was incorporated.

As a prophylactic measure this lining possessed at least one distinguishing feature: It was impossible for mucous and other

oral accretions to attach themselves thereto, as in the case of exposed rubber surfaces, thus diminishing very materially the surface favorable to the propagation of the micro-organisms and their products.—*Office and Laboratory.*

REPLACING A BROKEN FACING ON A BRIDGE.

C. C. Bachman, Waterloo.

He first removed all pieces of porcelain from the pins on the bridge, selected a facing of size and shade desired, ground the pins down to the surface of the back, and then with a copper disk wet with water and covered with carborundum powder, cut a groove in the back of the facing to admit the pins still on the bridge with slight undercuts on each side of the groove. He finally cleaned the facing, also the pins on the bridge, and cemented to place.

One of these facings had withstood wear and tear for three years.—*Office and Laboratory.*

TO PREVENT DISCOLORATION OF FACINGS.

Doctor Hines.

I have found that the tendency of porcelain facings to discolor when the backings are soldered to place may be prevented by painting the surface of the facing upon which the backing is placed with a thin solution of whiting in water, being careful, of course, not to use enough to interfere with a close adaptation of the backing.—*Register.*

SWAGING GOLD DUMMIES IN VULCANITE FLASKS BETWEEN PORCELAIN AND PLASTER.

Stewart J. Spence, Chattanooga, Tenn.

Where, in bridge-work, it is desired to use all gold dummies, the shells for the same can be easily, beautifully and perfectly swaged by the aid of the vulcanite flask in the following manner:

Take porcelain teeth (or tooth) and grind and wax to the bridge models in the same way as you would set up teeth for a

plate. Then remove these teeth in a body from a model to the lower half of a vulcanite flask which has been filled with plaster. This transference may be correctly accomplished by affixing sealing wax, modeling compound or sticky wax to their buccal (or labial) or occlusal surfaces. After doing this the wax which had been used in setting them up on the model may be picked away, leaving the porcelains ready to be transferred to the plaster. Imbed them, pins downward in the plaster, in such a way that the buccal cusps will point directly upward when the modeling compound is removed. This leaves exposed above the plaster the buccal and occlusal surfaces and, at each end, a portion of the apporcelain as is needed, and indeed, it is better to leave exposed than it is desired shall be reproduced in gold, it is easy to trim away a little of the plaster, so leaving "above board" as much porcelain as is needed, and indeed, it is better to leave exposed a little in excess, in order to obtain some edge of gold to dress down, so as to make a nice finish. Especially is this true at the buccal cervix of the porcelain tooth, where the neck may be advantageously extended by carving the plaster to a slight depth, say, a twelfth of an inch. The upper section of the flask is now placed on the lower and filled with plaster. When this latter has set, the flask is opened, and the sharp edges of the plaster counter-die impression of the porcelain tooth are nicely rounded, and then swaging is proceeded with much in the usual manner, except that the dies are brought together by screwing instead of hammering.

The slow movement of the screw is much less likely to tear the metal than is the sudden blow of the hammer. Indeed with but little annealing 28 gauge of 22-k. gold can quickly be brought to conform to the exposed porcelain surfaces. The result is a beautiful piece of work, shaped like teeth, with the occlusal surfaces correct in articulation because formed on dies which had been ground to proper occlusion and the whole thoroughly hygienic, because having no interdental spaces. Indeed, the buccal surfaces receive that form which careful operators are at much pains to give them, in other methods, by flowing solder into them.

If it is desired to make a saddle bridge in connection with these dummies, this is easily done by taking a strip of 24-k. gold and burnishing it to the model, which may be done either before or after swaging the block of gold shells.

I do not know whether this operation could be satisfactorily performed with plaster of Paris. I use Spence's plaster, which can be made to set eight times harder than plaster of Paris. However, for the lower section of the flask plaster of Paris would probably work, and Melotte's metal might be used in a circumscribed portion of the upper section, enough to envelop the teeth, the rest of the upper section being filled with plaster of Paris.—*Items.*

DEATH OF THE PULP.

J. C. Salvas, Philadelphia.

We find an astonishingly large percentage of the death of pulps due directly to causes that we can control to a considerable extent. That the drilling of retaining pits into the body of the dentin and the presence of a filling that possesses, to a greater or less degree, the property of thermal conductivity, can be responsible for irritation sufficient to destroy the vitality of the pulp, proves conclusively the intimate connection between that tissue and the pulp organ. It is in view of this fact that in treating caries, however superficial the decay may be, methods should be adopted that will reduce to a minimum the chances of subsequent trouble. The practice of drilling retaining pits as a means of anchorage for gold fillings is gradually giving way to modern and more effective methods of retention.—*Brief.*

FILLING APPROXIMATING CAVITIES IN DECIDUOUS TEETH.

C. N. Johnson, Chicago.

The problem of filling two cavities when they face each other so as to protect that space is a serious one. For some years I have been following this plan: Where two molars are decayed, the second on the mesio-occlusal surface, and the first on the deciduo-occlusal surface, I bridge across them from one cavity to the other, thus protecting the interproximal space.

When I put gutta-percha in those cases I protect the gum in the interproximal space by using a metal guard across the space; otherwise the gutta-percha will wedge down, and while the patient may not complain, yet it sets up an irritation that is not very

desirable. I rest the metal guard on the gingival wall of one cavity and extend it across to the gingival wall of the other cavity. I find that to be the most satisfactory way of managing those cases. It is a very slight operation; gives comfort, and I have been able to manage the most difficult of these cases more satisfactorily with that method than when I attempted to fill the cavities separately. The main thing is to give the child relief and without taxing it too much.—*Review.*

GETTING MODEL FROM PLASTER CAST.

B. Q. Stevens, Hannible, Mo.

In getting a model from the plaster cast—I always take impressions in plaster, and I never coat them with anything at all—if you want a perfect impression, take your plaster cast and set it in water about ten minutes and pour your plaster in the impression. You have no trouble that way; they will separate perfectly without the use of varnish or anything else, and the model will not be marred.—*Western Journal.*

REPAIRING RUBBER PLATES.

R. M. Pearce, Rock Island, Ill.

Instead of using wax to hold parts together when repairing a broken rubber plate, coat the cut edges with rubber cement and replace removed portion of plate with rubber slightly in excess of what is required when finished. Place a piece of tissue paper over the new rubber to keep plaster from adhering and flask as an ordinary case. When the flask is separated a depression will be found on the plaster in the upper part into which the tissue paper will be found. Remove the tissue paper and fill the depression with plaster, being careful to correctly outline the surface. The flask can now be closed securely and the case vulcanized.

By this method nothing except the new rubber comes in contact with the fractured or cut edges of the plate, thus insuring a stronger joint. It also takes less time than by the ordinary method.—*Review.*

TREATMENT OF THE CAVO-SURFACE ANGLE.

E. K. Wedelstaedt, St. Paul, Minn.

Doctor Rhein trims the cavo-surface angle with a gem stone and then finishes it with sandpaper disks, a method I have observed many men use. Tight margins cannot under any circumstances be made against a smooth margin if gold is the filling-material used. Gold slides over a polished surface, for there is nothing against which it can be restrained in its course. But roughen that margin by planing it with a sharp chisel, and gold will hug that roughened surface, if properly placed, so that water-tight margins can be made.—*International.*

BLEACHING DISCOLORED TEETH.

Doctor Bogue, New York.

The first procedure is the closing of the apical end of the root with oxychloride of zinc and cotton. Then oxalic acid is applied and hot air, after which dry chalk is packed into the canal and left over night, repeating if necessary. Finally pyrozone, twenty-five per cent, is applied until the color returns. The canals, etc., are then dried, the inner surface of the cavity covered with copal varnish, over which oxyphosphate is placed.

SUPPORTS FOR BAKING PORCELAIN CROWNS.

J. H. Prothero, Chicago.

Take pieces of soap-stone and carve them into suitable forms and sizes to support crowns and bridges while baking. Then bake them and they will get hard like the lava tips of a gas-burner, and will last a long time.

CASE HARDENING.

J. Mills, Bradford, Ont.

Heat the piece to be hardened, with a blow-pipe until it has become cherry red in color and keep dusting on ferro cyanide of potash for a few minutes. Heat up again and plunge into cold

water. If the metal comes out greyish white in color no file can even scratch it, but if it does not the cyanide must be kept on longer.—*Review.*

SAVE YOUR OLD PORCELAIN TEETH.

H. Almon.

When I spoil a facing I save it. A box of old teeth, either plate or rubber, will assist in obtaining a correct shade when you cannot find it on the shade guides. These odd pieces of teeth are also convenient sometimes to add for fusing in porcelain work.—*Review.*

TO SMUDGE GOLD.

When your own back is turned let your helper at the chair, or an overbusy patient, turn that of your annealing pan. If it is of mica you may not know by merely looking at the thing that it is otherwise than right side up. The real test comes with your effort to make the pellets cohere in the building of the filling. Blame the gold, or the man who worked it up, till your learn—otherwise.—*Office and Laboratory.*

TO DETERMINE SHADES.

To get the shade desired in porcelain crowns, facings, or teeth for partial dentures, look *not at the artificial tooth,* but at the natural tooth or teeth next the space to be filled. Try the ancient method first, then the one suggested here, and you'll be surprised at the "offness" of your first choice.—*Office and Laboratory.*

HOT BOARD FOR HEATING RUBBER.

Anent Doctor Rice's suggestion in our November issue to use pasteboard in heating rubber preparatory to packing, Dr. M. R. Thompson, of Lewiston, Pa., writes in favor of the use of a thin board, about six by twelve inches heated with the flasks in an oven to a temperature that will make the rubber plastic.—*Office and Laboratory.*

COTTONOID AND COTTON ROLLS SHOULD BE TREATED.

Used as it comes from the maker, whether as cottonoid, lintine or rolls, it fills the air on handling with flocculent matter that is highly irritating to the air passages. This fact makes it necessary at times to remove the material from the mouth that the patient may recover from a paroxysm of coughing. To rid any one of these forms of cotton of this easily detached matter wrap in the smallest of "aseptic" napkins—*Office and Laboratory.*

SOLUTIONS OF GIVEN STRENGTH.

To make a solution of a given strength multiply 456.5 grains (approximately 455 grains) by the percentage of solution required. For example: If you wish a 4 per cent. solution, multiply 455 by .04 which gives 18.2 grains to the fluid ounce. For a 20 per cent. solution, multiply 455 by .20 which gives 91 grains to the fluid ounce, etc.

TO MAKE RETAINING POINT IN BACK OF INLAY.

Mr. C. Rippon showed an ingenious method of making a retaining point in the back of an inlay so as to obviate cutting grooves for retention. The method was to make a small hole in the back of the inlay before baking and filling it with investing silex. After the inlay was baked the silex was removed from the hole, which acted as a retaining point when cementing in.—*Record.*

INLAYS IN EXTENSIVE CAVITIES.

Geo. Evans.

There is one other little feature that I have not heard spoken of before, and that is the use of inlays in extensive cavities where they involve approximal and morsal surfaces—probably both approximal surfaces. I have made what I might term sectional inlays for those cases, building up one side of the tooth and then the other side, "keying" both inlays, and restor-

ing the whole with a sectional porcelain filling or fillings, which would not be possible with a single one. This has given me much satisfaction.—*Cosmos.*

MANAGEMENT OF BROKEN MATRICES IN INLAY WORK.

Geo. Evans, New York.

When matrices are broken in adapting them to the cavity, I place the porcelain body in the matrix before I remove it from the tooth, press it into position, brush off the surplus particles around the edge of the matrix, remove, and without investing—whether a gold or platinum matrix—carefully place it in the furnace and bake it; by this means I avoid a misfit caused by any rent. I then refit to cavity, and finish the subsequent bakings.—*Cosmos.*

ASEPTIC COTTON.

W. D. Miller, Berlin.

Wads of cotton or bibulous paper which are rolled together between the fingers will seldom be found to be sterile. I have been in the habit of preparing a large quantity of them, soaking them in a solution of thymol in alcohol, drying and keeping them in a box free from dust; we then have them not only aseptic but antiseptic. The sterilization by dry heat is unsatisfactory.—*Cosmos.*

STERILE BROACHES.

W. D. Miller, Berlin.

In making root-treatments many dentists cleanse the canal by means of cotton rapped around a thin broach—in fact, this is often the only feasible way. In wrapping the broach we use our fingers, which probably have before been in the patient's mouth, maybe several times, and carry great numbers of bacteria. No one, of course, could expect such broaches to be sterile. If we wish to operate with sterile broaches the only way is to prepare a large number beforehand and sterilize them by heat or by impregnating

them with a solution of some antiseptic in absolute alcohol (which will not rust the needle), or keep them in a box with a tablet of formalin, or, finally, put them for from one to two hours in the formalin apparatus. If left in long the cotton becomes brittle and adheres to the needle.—*Cosmos.*

ACOIN AND COCAIN FOR LOCAL ANESTHESIA.

R. W. Simon, Baltimore.

Doctor Bab of Berlin has published an article in the *Wiener Zahnarztlichen Monatsschrift,* embodying the results he obtained with acoin. The solution which gave him most satisfaction has the composition. Acoin 0.5 gm., cocain mur. 0.5 gm., sodium chlorid 0.8 gm., carbolic acid 0.2 gm., aqua dest. ad 100 cc. He considers this solution, containing only one-half of 1 per cent. each of acoin and cocain, equal in its anesthetic virtue to a 5 per cent. cocain solution. Doctor Bab has used acoin in over 200 cases and emphasizes the fact that he has never noticed such symptoms as giddiness, vomiting, fainting, labored respiration, etc., as may be expected to occur in cases where even 0.03 gm. of cocain are injected; neither in the cases of patients with cardiac affection were unpleasant symptoms noticed; nor did he observe a case of idosyncrasy. He explains the harmless action of the solution by the fact that with the injection of each cc. only 0.005 gm. of each acoin and cocain, enter the system—quantities which are too small to do harm, especially as acoin is only one-third as poisonous as cocain.—*Cosmos.*

RUBBER DAM FOR CHILDREN'S TEETH.

M. L. Rhein, N. Y.

In ninety-five per cent. of the children whose teeth I fill, whether deciduous or permanent, I apply the rubber dam, and I find it does not annoy the patient, but they rather enjoy it. I say that advisedly. I give them the saliva ejector with it, as a rule, and it is as much a plaything to a child, if properly handled, as anything can be. That is the object to be desired —to make the dental operation appear not in a serious light—

that while you are at work seriously, the child should, if possible, find it pleasant. Between stuffing a child's mouth with napkins and applying the rubber dam, as far as most cases go, I believe the application of the rubber dam is far more pleasant to the patient, and the only reason why you may question this is because you have perhaps not given it the trial it is entitled to.—*Items.*

CROWNING A MISPLACED ROOT.

Dr. Cornish.

Occasionally it is necessary to crown a root which is not in line with the adjoining teeth. When, in such cases, the facing must be brought forward bodily, so as to project beyond the root, I have adopted the following method: I first fit to the root a cap and dowel, precisely as I would in making a so-called Richmond crown. With this cap and dowel in position I take impressions of the vacant space and the adjoining teeth so as to obtain a model of the parts and of the articulating teeth. Before running plaster into the impression see that the cap is in place and fill it with wax so that it can be easily removed from the model. Then, with the models as a guide, fit the tooth, leaving enough room between the tooth and the cap for a thickness of No. 34 gold plate. Take a piece of No. 34, 24-carat gold plate large enough to cover the entire back of the teeth, pierce holes for the pins, and carefully fit it to the tooth, letting it extend from the cutting edge to the extreme root end of the tooth. Wax this in place on the cap so as to bring the facing to the desired position. Then remove the facing from the backing, leaving the backing waxed to the root-cap. The cap and backing are then removed from the model, invested, and soldered with a 22-carat solder. When this has been done, reinvest with the labial side up, and with 22-carat solder fill up the overhanging between the backing and cap, adding plate, if need be, so as to have enough to make a neat finish. When this has been done, replace the fusing and solder it to the fix-

ture. By this method a strong and cleanly crown can be made without unduly risking the facing by repeated soldering.—*Brief.*

PULP TREATMENT.

C. N. Johnson, Chicago.

When an exposed and inflamed pulp is brought for treatment, the first procedure is to syringe out the cavity with warm water and remove all of the debris and decalcified dentin with an excavator. This may readily be done in these cases, with almost no pain, if the operator is careful not to touch the pulp. After the cavity is cleaned as perfectly as possible, it is usually best to slightly puncture the pulp with a fine explorer to induce a free flow of blood. This may cause momentary pain, but it is only momentary and subsequent relief is thereby assured. When the pulp begins to bleed, warm water should be gently syringed into the cavity until the bleeding ceases, by which time the tooth will usually be comfortable.

Make a paste of the oil of cloves with the powder supplied with our oxyphosphate of zinc, and gently pat it over the exposure and seal the cavity carefully with gutta-percha. A pulp treated in this way will remain comfortable until it dies, and the first indication of death is a slight soreness in the tooth on pressure. Instructions should therefore be given to bring the little patient to the office on the first symptom of soreness, when the gutta-percha may be removed and the canals treated in the usual way. Of course, there is occasionally the possibility of the case being neglected, as other cases often are, till an abscess starts, but this is a contingency for which the dentist is not responsible, and usually if an abscess does begin, it can readily be relieved by opening the cavity to give it vent, syringing it out well with warm water and applying an antiseptic. —*Extract Ietms.*

SOCIETY

RESOLUTIONS ON THE DEATH OF JONATHAN TAFT.

WHEREAS, It has pleased the Divine Ruler to call into eternal rest Johnathan Taft, who passed the portals of the great unknown October 15, 1903, after a long and vigorous career of usefulness in the profession; and

WHEREAS, This Society especially feels his demise from the fact that one-half of the members constituting this body have received a large portion of their early dental knowledge and training directly from his lips; and we further recognize that he was unique in his power to impress upon the pupils who sat under his instruction sound principles of ethics and practice. He was great in his goodness, a characteristic which stands as a shining light for others to see and follow in his footsteps; therefore, be it

Resolved, That The Odontological Society of Chicago hereby testifies to the loss experienced by the profession in the death of Dr. Taft, and extends sympathy to the family in their bereavement; also

Resolved, That these resolutions be spread upon the records of this Society, and that a copy be forwarded to the dental journals for publication.

(Signed) J. G. REID,
L. L. DAVIS,
J. W. WASSALL.

Adopted January 12, 1904.

BOARD OF DENTAL EXAMINERS OF CALIFORNIA.

The Board of Dental Examiners of California will hold its next examination in San Francisco, commencing on May 23, 1904, and will also hold an examination in Los Angeles, commencing on June 13, 1904.

F. G. BAIRD, *Secretary*.

INDIANA STATE DENTAL ASSOCIATION.

The Indiana State Dental Association will meet in Indianapolis June 14, 15 and 16, 1904. A great meeting.

A. T. WHITE, *Secretary*.

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The National Association of Dental Examiners will hold their annual meeting in the Coliseum building, corner Thirteenth and Olive streets, St. Louis, Mo., on the 25th, 26th and 27th of August, beginning promptly at 10 A. M. Telephone and telegraph offices in the building. Hotel accommodations will be secured for the members.

CHAS. MEEKER, *Secretary-Treasurer.*

NEW JERSEY STATE DENTAL ASSOCIATION.

The New Jersey State Dental Society will hold their annual convention in the Auditorium as Asbury Park, N. J., July 21, 22 and 23. The Exhibit Committee are prepared to allot space to exhibitors. Make al applications direct to the chairman.

DR. W. G. CHASE.

Princeton, N. J.

IOWA STATE DENTAL SOCIETY.

The forty-second annual meeting of the Iowa State Dental Society will be held at Des Moines, Tuesday, Wednesday and Thursday, May 3, 4 and 5, 1904.

W. R. CLACK, *President,*
Clear Lake, Ia.

C. W. BRUNER, *Secretary,*
Toledo, Ia.

BOARD OF DENTAL EXAMINERS OF THE STATE OF MINNESOTA.

The Minnesota State Board of Dental Examiners meet, for the purpose of examining applicants for license, April 5, 6, and 7, 1904. No application received after 12 M., April 5th.

Meeting held at dental department of State University at Minneapolis.

C. H. ROBINSON, *Secretary.*
Wabasha, Minn.

AFTERMATH

PERSONAL AND MISCELLANY.

Married.—Doctor Haisley, Dunkirk, Ind., was married January 7th to Miss Maude Hawkins, Lynn, Ind.

Appointed on State Examining Board.—Dr. H. R. Breault, Phenix, R. I., has been appointed a member of the State Examining Board.

Will Practice Osteopathy.—Dr. D. J. Pollock, Sterling, Ill., will discontinue his dental practice and devote his time to the practice of Osteopathy.

Lorain County (O.) Dental Society.—Officers elected are: President, J. G. Wherry; vice-president, C. S. Kelsey; secretary-treasurer, J. E. Ewald.

Clinic a Success.—The first annual clinic of the State University of Iowa, given the first week in February, was a grand success in every particular.

Postgraduate Course.—The Dental Department University of Michigan gave a postgraduate course in porcelain work to practitioners during February.

Fined for Illegal Practice.—J. Belver, dental student in Philadelphia, was fined $50 February 2d for practicing without a license from the examining board.

Injured by Explosion of a Vulcanizer.—Dr. J. E. McLaughlin, Assumption, Ill., was painfully injured by the explosion of a vulcanizer in his office January 31st.

Dentist Suicides.—Dr. W. D. Saunders, Grand Rapids, Mich., suicided in Ann Arbor, by shooting himself, January 27th. An unbalanced mind the supposed cause.

Partnership Dissolved.—The partnership existing between Doctors Hatfield and Moore, at Marysville, Kan., has been dissolved, Doctor Hatfield continuing the practice there.

T. B. Welch, Dead.—Dr. T. B. Welch, Vineland, N. J., well known as former editor of "Items of Interest" and "Welch's Dental Monthly," died recently at an advanced age of 78 years.

Appointed on State Board.—Dr. S. R. Holden, of Duluth, Minn., has been appointed a member of the State Dental Examining Board to succeed Doctor Wierick, of St. Paul, whose term has expired.

Dentist Bankrupt.—S. D. Merrell, Gloversville, N. Y., has filed a petition in bankruptcy for relief from debts to the amount of $1,360.40. Of this sum $565 is secured. The assets are nothing.

Business Change.—Emil Leclaire and F. B. Koch, popular dental supply men, formerly with the St. Louis Dental Mfg. Co., are now with the well-known John T. Nolde Dental Mfg. Co., St. Louis.

A Popular Student Dead. J. W. Gussenbaur, a popular student and member of the senior class, Dental College, O. M. U., Columbus, Ohio, died February 11th from spinal meningitis. Aged 22 years.

Losses by Fire. -Dr. Emil Miller, Chicago, Ill., loss $100. Dr. W. E. Lewis, Youngstown, O., loss about $150. Doctors Bell & Currier, Aurora, Ill., loss $100. Dr. C. Whittington, Valdosta, Ga., loss $600.

Anderson Dentists Organize. -Anderson, Ind., dentists have organized for mutual protection. Doctor Orland was elected president; Doctor Schellenger, vice-president; Doctor Brookins, secretary-treasurer.

Saved Lives of Three Persons.—During a fire in Dayton, Ohio, Dr. A. L. Lambert, dentist, standing on the sidewalk caught three girls, as they jumped from upper windows, and thus saved their lives.

Fined for Practicing Without a License.—At Spokane, Wash., D. H. White, P. M. Parsons and F. M. Stine were found guilty of practicing without a license and have filed appeal bonds to the Supreme Court.

Thefts.—Dr. A. C. Barr, Alton, Ill., lost about $100 worth of gold and supplies by thieves. Dr. J. H. Parsons, East St. Louis, Ill., loss by theft $150. Dr. R. L. Munn, Freeport, Ill., robbed of supplies February 9th.

Doctor Barrett's Successors.—Dr. Geo. B. Snow, Buffalo, succeeds Dr. W. C. Barrett as Dean of the Dental Department, University of Buffalo, and Dr. S. B. Dewey, Cleveland, has accepted the chair of pathology in the institution.

Injured by Exploding Vulcanizer.—The explosion of a vulcanizer in the offices of Dr. Louis E. Ireland, Chicago, severely injured Margaret Crilly, the dentist's assistant, and partly wrecked the room. The windows were blown out.

Death from Swallowing False Teeth.- The noted millionaire brewer, Berthold Schoeler, was suffocated January 27, 1904, at his home in Rhein-Hesse, Berlin. He had swallowed his false teeth and died before they could be removed.

Mississippi State Examining Board.—The Governor has appointed the following dental board in Mississippi: George B. Clement,

Macon; G. B. Stewart, Greenwood; P. P. Walker, Brandon; J. P. Broadstreet, Grenada; P. H. Wright, Oxford.

Seeking $1,000,000 Endowment.—President Plass, of Washburn College, Kansas, is making an effort to increase the endowment of the College by the sum of $1,000,000. This, if it comes, will probably be partly devoted to new buildings and the establishment of a dental school.

Bran-new Ones.—Dr. J. Q. Byram, Professor in the Indiana Dental College, is rejoicing over the appearance of a daughter at his home February 4th. Dr. Alden Bush, Professor in Ohio Medical University, College of Dentistry, Columbus, Ohio, announces the arrival of a son January 23rd. Next!

Antisepsis.—In these days of the spread of information respecting the importance of antisepsis, the visitor to the dental office looks keenly for evidence as to how the operator keeps his instruments and his person. When the patient's eyes travel on this inspection, happy is he who has prepared for it.—Western Dental Journal.

The Pink Rubber Front.—How we cherish the smile of a friend! but deliver us from ever having to meet one with a pink rubber front. It gives us the shivers, and doubly so if we know we are the guilty one who is responsible for the handicap. Guilty every one of us! May we be less and less so as the days go by.—Dr. F. O. Hetrick.

The Kanawha Valley Dental Society.—The dentists of Charleston, W. Va., met on January 4 and organized the above society. Dr. J. N. Mahan was elected president; Dr. Gwynn Nicholson, vice-president; Dr. H. S. Barr, secretary; and Dr. F. R. Butts, treasurer. Any ethical practitioner in Kanawha Valley is eligible for election to membership.

Obtains Damages of $1,000.—An actress, Miss Studholme, was January 23rd awarded $1,000 damages in a suit against Dr. E. Foley, Brooklyn, N. Y., for printing in a circular a picture of the actress with teeth missing. She sued him for libel, and aside from the amount of damages received made him make a public apology through the newspapers.

Sues Dentist for Lost Voice. Mabel Lloyd, an actress, says that some of her teeth are a drudge to her and that her voice is out of joint. She blames a dentist of Chicago for all her woes, which she says are worth $5,000. The young woman was formerly a member of "The Office Boy" company, but since her teeth and voice got out of fix she hasn't done anything except nurse them.

Alumni of Dental Department University of Iowa, organized February 3rd, and elected the following officers: President, K. M. Fullerton, Cedar Falls; vice-president, J. B. Pherrin, Central City; treasurer, C. M. Work, Ottumwa; secretary, E. A. Rogers, Iowa City. Committee on Constitution and By-Laws, R. S. Bandy, Tipton; Dean W. S. Hosford, Iowa City, and F. T. Breene, Iowa City.

Why the Dentist Laughed. The dentist was cleaning Mrs. Flan-

nigan's teeth. "What a splendid set of teeth you have, Mrs. Flannigan?" he remarked. "Shure, they ought to be fine. They're imported," she replied. "Imported!" said the dentist in astonishment. "Why, what do you mean? They're your own teeth." "But I'm tellin' yer they're imported—from Ireland along with meself."

An Aid in Prophylaxis.—I wish before this discussion on prophylaxis is closed to mention the most valuable agent which every dentist should have as part of his armamentarium, namely, floss silk, reinforced with a little cotton twisted upon it. This agent, if placed in the hands of our patients and properly used, will do more than a thousand brushes toward preventing dental decay interproximally.—Theodore Gramm in Review.

One Cent Damages for Seven Teeth.—I. Silverman, Chicago, got into an altercation with another man and had seven teeth knocked out. He sued for $185 damages, but the Judge upon examination of the lost teeth gave his decision as follows: "These were very poor teeth and should have been pulled anyhow. The defendant has saved you a dentist's bill, so there is not much coming to you. I award you damages in the sum of 1 cent."

District of Columbia Dental Society.—New officers elected are: President, Dr. Wm. D. Monroe; vice-president, Dr. S. W. Bowles; corresponding secretary, Dr. Charles Diedel; recording secretary, Dr. A. J. Brown; treasurer, Dr. M. F. Finley; librarian, Dr. H. C. Thompson. A noteworthy feature of the evening was the presentation by Dr. Emory H. Bryant to Dr. Wm. D. Monroe, the newly installed president, of a beautiful gold-mounted gavel.

New Dental Law for District of Columbia.—The President has signed the bill to amend the law relating to admission of dentists to practice in the District of Columbia by providing that the District Dental Board of Examiners instead of requiring an examination, may issue a license to practice to any dentist who shall have been in practice for five years or more on the certificate of the Board of Dental Examiners of the State or Territory in which he practiced.

Amendment to New Jersey Dental Law.—Mr. Miller, of Cumberland, introduced in the House January 26, 1904, a bill which amends the bill regulating the practice of dentistry, so that a resident of the State who, in good faith was practicing dentistry prior to the passage of this act and who has pursued the general practice since, may continue, provided he shall file prior to January 1, 1905, a statement of his name, residence and place of business and annually thereafter register his name with State Board.

Dentist Assists in Identification of the Dead.—Of the hundreds of Iroquois dead only two victims remain unclaimed. January 16th the body of Howard N. Palmer, son of William Palmer, was identified at the county morgue. Identification was made complete by Joseph H. Whitfield. A necktie the boy was given as a Christmas present by his mother was the means of identification. The family dentist was

also of assistance in making identification sure. The identification settles conflicting claims to an estate of $23,000.

American Dentist Fined.—An American dentist named Dubouchez, who is practicing under a Philadelphia diploma, indicated his calling by the simple title of "Doctor" on his sign, has been condemned to pay a fine and damages amounting to $25. Suit was brought against him by the Paris (France) Society of Surgeon Dentists. The society claims that the sign deceived persons as to the real character of his calling and that Dubouchez did not make known the foreign origin of his diploma. Doctor Dubouchez has carried the case to a higher court.

Inventor of Iris Diaphragm Dead.—Mr. John Henry Brown, the inventor of the now widely used iris diaphragm, died on December 19th, at Hove, England, aged 67 years. He was a dentist, and never having patented his invention reaped no pecuniary reward from it. In the early seventies he took his home-made model to Smith & Beck, the well-known opticians in Cornhill. The model, although roughly constructed, differed in no essential particulars from the diaphragm at present on the market. Mr. Brown was a fellow of the Royal Astronomical Society.

Southern Dental Society of New Jersey.—New officers are: President, Dr. Alphonso Irwin, Camden; vice-president, Dr. W. A. Jaquette, Woodstown; treasurer, Dr. Mary A. Morrison, Salem; recording secretary, Dr. Stanley Ironside, Camden; corresponding secretary, Dr. C. Ironside, Camden; librarian, Dr. J. G. Halsey, Swedesboro; executive committee, Dr. J. G. Halsey, Dr. W. W. Crate, Dr. C. P. Tuttle, Dr. E. E. Bower, all of Camden, and Dr. O. E. Peck, Bridgeton; membership committee, Dr. Alphonso Irwin, Camden; Dr. J. E. Jacquette, Woodstown; Dr. W. H. Gelston, Camden.

How the Other Dentist Took Impression and Bite at the Same Time.—"Last week an old gentleman came into my office to get a new upper and under set of teeth, his old plates not proving satisfactory. After taking his impression and bite in the usual way—during which operation the old gentleman was very uneasy and frequently asking if this, that or the other thing I was doing was necessary. He told me the other dentist did not do it that way . "No! How did he do it?" "Well, he just filled my mouth with soft wax, and putting his hand under my chin, made my chin kiss my nose!"—H. S. Mann.

Massachusetts Board Wants Law Amended.—The State Board of Registration in Dentistry in Massachusetts wants the dental law so amended that persons employing unregistered dentists be held equally guilty with such persons. That would mean the punishment of a man with an aching tooth if he patronized a dentist not recognized by the State. The Board calls attention to the fact that there is no way of prosecuting dentists who do business without taking the trouble to get registered, and recommends an appropriation for the employment of agents to investigate and prosecute those who violate the law.

Mrs. Eddy Calls a Dentist.—Rev. Dr. James M. Buckley, an able Methodist preacher and editor of the "Christian Advocate" for some time, is fiercely attacking Christian Science and its chief advocate, Mary Baker Eddy. He declares Mrs. Eddy does not practice what she preaches. As an instance he relates that she had a toothache and instead of bringing to bear her fundamental principles she sent out for a dentist. More than that, she was placed under the influence of an anaesthetic so that no pain should be felt while the troublesome tooth was being extracted. Doctor Buckley laid particular strees upon this story, saying it was authentic and could not be disproved.

Fifty Thousand Dollars for the Loss of Teeth. Some time since, owing to a slight accident to the train in which she was traveling, Mme. Sarkisowa, a Russian operatic artist, was thrown violently against the door of the car and had several of her front teeth knocked out. The result was that her singing was considerably impaired, and she claimed $100,000 compensation from the railway company concerned. The company offered her $100, but she declined to accept it, and sued for damages. The Court held that the loss of five front teeth had so affected the artist's capacity as a singer that her prospects were entirely altered, and awarded her as compensation the sum of $50,000.

Deaths.—Dr. James Gilmore, dentist in Chicago, died January 24th, from the effects of an operation for appendicitis. Dr. J. R. Campbell, one of the oldest citizens of Sandersville, Ga., died January 19th. He had been in practice since the war. R. T. Shepared, dental student, Chicago, committed suicide by the inhalation of gas at Hotel Veley, Chicago. Dr. Henry Leavet, Skowkegan, Me., died of heart failure, aged 56. Dr. Harry S. Terry, a popular dentist of Detroit, Mich., died from typhoid fever. Dr. Augustus Hartgrove, dentist in Harpers Ferry, died January 22, in an infirmary in North Carolina. He was a victim of softening of the brain. G. A. Gotte, freshman student in the University of Michigan, died suddenly in Ann Arbor, January 13th. Dr. L. R. Esau, Milwaukee, Wis., died from apoplexy February 5th. Dr. John Wagner, Cleveland, O., died of morphine poisoning February 8th. Dr. K. F. Eller, Louisville, Ky., died suddenly February 6th.

A Free Dental Service for the Sick Poor at Their Homes.—Sick people are often great sufferers from affections of the teeth and surrounding parts, and in many cases are unable to leave their homes for treatment, and are therefore practically without skilled help. To meet this condition, the Dental School of Harvard University has established a service consisting of a corps of men prepared to visit the sick poor at their homes and relieve pain arising from dental disorders. This service does not contemplate the filling of teeth or making of plates, but simply the relief of pain, expecting that, on recovery of the patients, they can personally visit the Infirmary and Oral Hospital of the Harvard Dental School and have such further attention as may seen advisable. For the present this work will be

limited to the city proper. It can be obtained by calling on the "Emergency Corps," Harvard Dental School, North Grove street, Boston, either by telephone or by letter.

Mandamus Suit Won by Examining Board.—The claim of Dr. Ellsworth Glenn against the Ohio State Board of Dental Examiners has been decided in favor of the Board. The new law enacted two years ago requires both a diploma and examination. Doctor Glenn had a diploma and came to the State before the law was passed, but failed to make proper application for a license until the new law went into effect. Doctor Glenn claimed that he had acquired a right to practice under the first law providing for an examining board, and that the law now in force does not apply to him because if it did it would be taking from him a right as a citizen acquired under the old law. Judge Evans holds that he enjoyed, not specially acquired, right under the old law, because he had not applied for a license under it. He had slept on his privileges under the old law to acquire a right under that law. The court sustained the demurrer to his petition for this reason. Doctor Glenn had made no application under either law's provisions. Doctor Glenn will carry the suit to a higher court.

More Light on the Reported Hazing of Lowe.—I have just received my January Summary, and see on pages 79 and 80, a clipping entitled, "Dental Student Dies from Effects of Hazing," and I wish to beg of you to correct over my name that report, as I am a member of that fraternity and think that it will injure our chapter. I know all of the initiation and can safely say that the treatment is in no way calculated to injure even the most delicate, and there is no drop of twenty feet at all, and the coroner's verdict does not say that there was a single bruise on his body, but instead it was brought out at the inquest that Lowe's body showed but one slight bruise, and that was on his scalp. Lowe was not initiated the night before his death, but a week before at least, and his being initiated had nothing to do with his death. I will give you a correct statement of the coroner's jury: "Martain Lowe came to his death by gas, or some deadly drug unknown to the jury. His death occurred at 747 West Lexington street, November 8, 1903. Verdict of coroner's jury.—J. G. Wiltshire, Coroner." Yours very truly, I. A. Roach, D. D. S., Madison, Wis.

Dental Examiners Mandamused. In an effort to compel the State Board of Dental Examiners to issue him a license to practice dentistry in the State of Washington and to place his name among the registered dentists of the State, mandamus proceedings have been instituted against the Board by Edwin J. Brown, of Seattle. Brown failed to secure a certificate at the last examination held by the Board in Tacoma. Later action was brought against him on the charge of practicing without a license, but the case was dismissed. In his affidavit and application for the writ the relator, Edwin J. Brown, states that he is a graduate of the Western Dental College at Kansas City, and that he has practiced dentistry and is licensed to practice in Missouri, and also in California. He alleges that his qualifications

to so practice are equal, if not superior, to the requirements of the State of Washington; that he filed his name with the Board of Examiners, took the examination on September 11, 12 and 13 at Tacoma, and "then and there answered all questions propounded by said Board that were material and relevant to the subject of dentistry and lawful to be asked by said Board, and successfully passed said examinations so far as the same is prescribed by law, or relevant to his qualifications to practice the profession of dentistry."

Recent Patents of Interest to Dentists.—746,804. Means for fixing artificial teeth to dental plates; Leo E. Evslin and G. Otto, Paris, France.

747,484, Dental dam holder; Erwin S. Rinehart, Anaconda, Montana.

747,978, Top of tooth-powder bottles, cans, or other containers; Henry B. Kent, New Brunswick, N. J.

748,977, Rubber dam clamp; Frederick H. Nies, New York, N. Y.

749,276, Rendering denture-plates, etc., intiseptic; Lucien Eilertsen, Paris, France.

749,624, Dental bur; Piercy B. McCullough, Philadelphia, Pa.

Copies of above patents may be obtained for ten cents each by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

More Kind Words for The Dental Summary.—

"The Dental Summary is without doubt the leading dental journal."—Dr. G. F. Huntington, Brooklyn, N. Y.

"I find The Dental Summary the newsiest dental journal I have read. I wish it was published weekly instead of monthly."—Dr. J. I. Lee, Demopolis, Ala.

"I have been a continuous subscriber for The Ohio Dental Journal and Dental Summary since 1887, and while I take every good dental magazine published, I believe I enjoy The Summary more than any of them. I see by my January number you are starting out better than ever for 1904."—Dr. H. J. Hill, Alma, Neb.

"I do not miss a single issue of The Dental Summary."—Dr. L. E. Sharp, New Lexington, Ohio.

"I would not be without The Dental Summary."—Dr. A. F. Webster, Toronto, Can.

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DENTAL COLLEGE TEACHERS' CONTRIBUTIONS

SOME INLAY IDEAS.

BY ALEXANDER JAMESON, D. D. S., INDIANAPOLIS, IND.

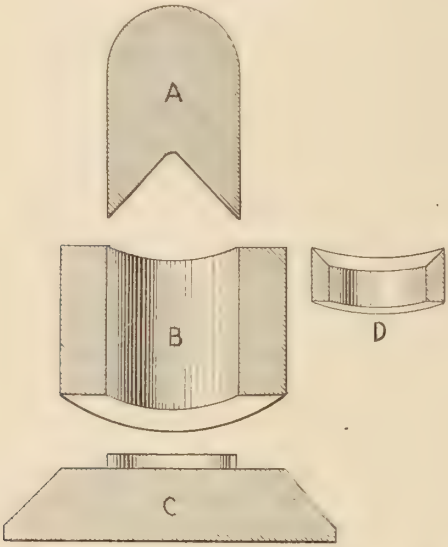
Professor of Orthodontia, Indiana Dental College.

A good friend of mine and a man of rare good judgment said not long ago, "that the inlay problem was solved; that all that remained was to solve the cement problem." I am glad he did not make this remark before I worked up a little scheme to simplify matters, for if he had I am sure I should have looked no further.

The idea which I refer to as having worked up needs less of special instruments and appliances than most others, yet there is one requisite and that is a swager. Other swagers may and possibly do do the work that this one was designed to do, but all I have seen are either clumsy or don't stand the necessary amount of force without showing wear. I give herewith some drawings of this device.

Now, as to inlays, I always take a cavity impression. In simple cases I use aboline or some lubricant and take my impression with "archite." It sets very quickly and is very hard. When I take the cavity impression away from the cavity I mount it in one of the rings that comes with the swager. If the impression has much bulk I mount directly into the modelling compound with which I keep the ring filled. If it is frail I cut a hole in compound and set impression with cement. If I purpose using low-fusing body I use a matrix, say about 35 or 36 gauge pure gold. Cavity impression is now brushed thoroughly with soapstone. The gold is put upon cavity impression in ring and squeezed down with end of finger or thumb

simply to hold it in place; the ring is then put upon base and the barrel is placed in position. I now take a piece of unvulcanized rubber about one-half the size of the plunger, and having dusted some soapstone on the side which I place next to the gold, I put it in the barrel, and placing plunger in position, hammer the gold down solidly. I now separate the gold from the cavity impression and anneal it thoroughly, handling with pliers and replacing the same on cavity impression. To this gold I now add quite a piece of



SECTIONAL DRAWING APPROXIMATELY TO SCALE OF SWAGER FOR INLAY WORK.

a—Hardened steel plunger.
b—Barrel or cylinder of steel.
c—Base of steel which can be dispensed with in the event that the barrel is placed on a strong anvil of steel.
d—Steel ring in which impressions are mounted and which fits accurately in the barrel. The unvulcanized rubber used should be approximately one third, in bulk, of plunger.

moss-fibre gold and reswage, thus filling all torn places and making a stiff, heavy matrix which will not warp. I now grasp the edge of this matrix in pliers and pack it with low-fusing body and bake in the flame of a Bunsen burner.

I can make a number of bakings in an incredibly short time, and can, if necessary, burn color out of one side or other of inlay. The matrix should be stripped from edges to center

of inlay, and when the inlay is so baked it fits exactly. With the high-fusing inlay I simply use the platinum, thin in the first place, and add several pieces to fill up torn places. The last piece I use somewhat heavier. A matrix so made will seldom change shape if carefully handled. Especially is this true if you anneal and reswage several times. I only claim accuracy in the case of high-fusing bodies, as it necessarily takes about as long to bake them. Inlays made this way necessarily fit very snugly, and some care will have to be taken in setting the same to get them seated exactly in position.

In all inlays where possible at all I put a clamp on tooth, letting the full force of one beak of clamp rest on inlay.

Without being dogmatic, I want to make one statement which I believe is true, and that is that a gradual steady pressure will accomplish more toward getting an inlay into place than a sledge-hammer will.

Another dogmatic proposition: The less cement the longer it lasts. And finally, if you have mounted your cavity impression carefully you can hammer your gold down on it with all the force necessary to make an exact duplicate of the cavity.

PROFESSIONAL EDUCATION.

BY GEO. W. COOK, B. S., D. D. S., CHICAGO, ILL.

Professor of Bacteriology and Pathology, School of Dentistry, University of Illinois.

In every phase of professional education it should be the aim of the teacher to interpret the achievements in his special department, and form a harmonious and comprehensive view of the relations of his subject with all other departments in the curriculum, especially in the so-called scientific subjects.

In a profession like dentistry there are two potent needs to be satisfied, which should be the purpose of science to contribute; first, a practical need, which will be a search after a fitting and agreeable adaptation of the external environments to the life process; second, a theoretical need, which is a search

after a harmonious idea of life and the world. And those who have to deal with the biological sciences should never lose sight of these two purposes, which is being constantly demanded of the natural sciences, and in the teaching of dental students, as well as other specialties, there is a growing tendency to narrowing down to the truly practical side, losing sight of that broad theoretical need which increases with civilization and is manifested in the craving for causality.

One-sided specialization frequently leads into barren fields and are incapable of recognizing other important territories. However, it would not be well to lay aside specialization, for broad-minded specialization is one of the most important factors in the advancement of scientific knowledge. Without broad-minded scientific research no general knowledge can be acquired. There are two kinds of research, one is a special research with a purpose to solve the problems of the practical or theoretical needs of life, the other is a mere pastime.

It is absolutely essential for the advancement of dentistry that the teachers, especially in the scientific branches, should do special research work in their departments, keeping clearly in view the general aim of other scientific departments. In this way the investigation will soon become systematic, and the great scientific problems that lie out before the dental student will soon become as simple to his reasoning powers as that of mixing amalgam. The physiological science deals as it does with the phenomena of living things, accordingly its task would be to investigate and interpret the various phases that enter into living processes.

In the study of all biological problems the last analysis comes back to the cell, therefore, cell physiology is one of the potent needs in the study of any problem that deals with the functional activities of the body, be it in health or disease. In order to solve the problems it is necessary to follow out different paths. Physiological chemistry has become an important factor in the interpretation of certain physiological and pathological phenomenas.

It is a well-understood fact, however, that many of the

organic compounds, especially those that have an important bearing to living substance are built up of such complexed chemical constituent, that it has been quite impossible to obtain a clear insight into the special relations of the atoms in the organic molecule, however, their percentage and composition is fairly well known.

There are three groups of chemical bodies that enter into living substance that clearly distinguishes it from the lifeless substance. These are known as proteids, fats and carbohydrates. Every student that leaves college should have these clearly fixed in his mind and their special relations to each other. When we consider the important role that proteid substance plays in the composition of living organic compounds, it will at once be apparent how necessary it is for he who is to deal with any pathological process that may be established in any organ or tissue of the body, to have a clear understanding of the chemical and physiological importance of the proteid molecule.

Since the announcement of the cell theory in 1838 and 1837 by Schleiden and Swann, it inaugurated a new area in the science of physiology and pathology, and without a thorough understanding of the mechanism of the cell in health, all interpretations of disease would be empirical, therefore, it is not necessary that a thorough understanding of the chemical composition of living substance be understood, but the mechanical construction should be so fixed in the mind that a logical hypothesis could be established as to the cause of disease. When the chemical and microscopic knowledge of the higher organization has been brought to the minds of the student, he is then prepared to take up the grosser anatomical structure, study out its mechanism, and then his knowledge can rapidly be enhanced by the study of the grosser physiological activity of the body.

After having fully established the anatomical and physiological mechanism of the body, both in minutia and chemical structure, the student has then reached some definite and logical reasoning powers on pathological lesions and the influence they may have upon the mind and body.

Since disease has practically come to be looked upon as due to external causes, one of the important branches of professional knowledge is the study of man with regards to his external environments. It is said, however, that the scientific period at which disease was at first studied was when Diodorus and Hippocrates propounded this same question, that environment had a great deal to do with disease. When it is considered that all through the periods men were satisfied with the vaguest conception of the true cause of disease, consequently, in early times disease was looked upon as a personification or animated cause.

Since it is plainly understood that all branches of scientific knowledge is unattainable, it has always been necessary, and always will be necessary, that man establish a hypothesis on which to reason with regard to the biological phenomena of life in health and disease, and his reasoning has, and always will be in accordance with the measures of cultivation prevailing at the time when he established his fundamental knowledge; consequently, in reasoning out the phenomena of disease this is done in accordance with a scope of his knowledge of the natural sciences.

It is practically impossible to reach a scientific understanding of the significance of bacteria in their origination of disease, unless the individual has a good understanding of histology, physiology and chemistry. These three subjects are of the most importance to those who expect to practice the healing art, and that all other knowledge pertaining to the sciences are of secondary importance. For instance, to study the diseases of plant life and such diseases as are frequently found in the lower animals, might be briefly reviewed with great profit to both the student and the teacher. This would not necessarily mean to go into any extended study, but that it can incidently be referred to as a means of broadening the idea of the student, and putting him closely in touch with the prevailing ideas of what constituted disease and its cause in both plant and animal life.

The germ theory of disease has lead far into a labyrinth of

difficulties, because it is thought by many that if the specific germ of acute infectious disease is given, the supposition is that everything that is needful is known regarding this particular disease, and that treatment and disinfection are only mere important details that can be worked out with leisure.

In looking back over the ideas held concerning disease it is not to be wondered at that when Virchow followed up the process of disease, and at last, as he thought, he found the true cause in the cell itself; thus establishing that well-known cellular pathology. Later, following his work, Koch gave the world what he thought the true cause of disease by a method of cultivating bacteria and classifying them into the specie to which they belonged. Then reinoculating animals and producing the same morbid process, which was truly convincing at that time that he found the true cause of disease, which was an external one, but it was soon found that all animals were not affected in the same way with the same disease, and that the same animals under somewhat different circumstances failed to contract the disease, when apparently all the circumstances were just as favorable as it had been in previous cases. So, to-day, disease is looked upon by the advanced thinkers as a biological process, and these ideas have come down through the paths of biological research.

When it is considered how nature uses such remarkable methods of transforming a predisposition to disease into absolute immunity to the same infectious process, and when it is considered that this same application is illustrated with regards to the disease of the dental organs, and how at different periods in life these organs will be badly diseased, and all at once immunity is established. When we also consider that where the destruction of the dental organs has been a progressive process for a considerable time, when by the insertion of a substance like gold, immunity to that part is established, not because the micro-organism that causes this phenomena never comes in contact with this particular area, but because there has been established some electrolytic phenomena, thus precluding the possibilities of re-establishing this micro-bio-

logical process, that has been in progress for considerable time.

So it can readily be seen that the mere study of bacteriology, either in medical or dental schools, is not sufficient to tell all that is necessary to be known about the cause of disease, even those in which the micro-parasitic cause is well established. The morphology of bacteria and their artificial cultivation teach but little with regard to their true relation to disease. These are only means of establishing their identity in connection with the process known as disease.

Students should be taught the laboratory technic in bacteriology, demonstrating to them the difference in the morphological appearance of many pathogenic forms. He should be taught the difference between the higher and lower forms of the fungi, and that class that belongs to the typical bacterial form, and finally working out for himself the chemical products of certain bacterial growths. He should be able to demonstrate on animals the effect of bacteria as disease-producing agents, with the privileges of studying the difference between the action of the micro-organism when inoculated into animals, and the effects produced when only the substance in which they have grown is injected into the animal.

Various forms of acids and alkaline substance should be tested during the process of growth. It will doubtless be considered by many that a course covering the ground herein mentioned would require altogether too much time. This is far from true, because from nine to twelve hours a week for six or eight weeks will give a student a fair knowledge of the technical bacteriology if each point is explained. This should be supplemented with a course of lectures, covering the physiological activities of bacteria and their relation to environing conditions.

This is an important study because it deals with both the internal and external cellular substance of bacteria. For instance, some of our most eminent writers speak of lactic acid as a bacterial toxine.

Knowledge of disease can only be interpreted to students in a manner that they may understand its true significance after they have gained the true fundamental principles of physiology, chemistry and histology. All other sciences play an important part in the prevention or cure of disease

REGULAR CONTRIBUTIONS

PORCELAIN INLAY*

BY ARTHUR E. PECK, M. D., D. D. S., MINNEAPOLIS, MINN.

(Continued from March Summary, page 183.)

CONTOUR, MARGINS AND INSERTION OF THE INLAY.

In this paper we will consider three methods for obtaining contour and margins. The first two methods are applicable to cavities of the first, second, third and fifth classes.

With this method the inlay is taken, after it is baked and still in the investment, to the lathe and ground until the margins of the matrix, which represent the outline of the cavity, are visible; then the matrix is removed and the inlay cemented in the tooth. If it was not ground to a perfect contour of the tooth, it should be completed in the mouth by the methods used for finishing a gold filling, using the gemstones, Arkansas stones and fine sand-paper and cuttle-fish disks and strips. Then for the final glaze use wooden points with polishing powder. The results of this method are entirely satisfactory providing the porcelain is not porous.

The procedure for the second method is begun by obtaining a counter-die of cement; this must not be taken until the matrix is swaged. The die should then be dusted with soapstone and placed in the die-cup receptacle, with the counter-die ring in position, having the thumb screw well to place. Then prepare a small mix of cement, the same as for taking the impression, and drop it into the counter-die ring. The plunger is placed in position and with a mallet tapped a few times. When the cement is hard, the die-cup and counter-die ring are removed by means of an instrument forced

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through the hole in the bottom of the die-cup receptacle; now tap the plunger lightly until the die is disengaged. If care is taken this will give you a counter-die which is a duplicate of the cavity. After removing the matrix the inlay is stuck in the cement counter-die with wax, and ground to the desired contour on the lathe. A Hindostan stone is par excellence for this work, as it gives a beautiful margin and leaves the filling, in a majority of cases, polished perfectly. But if you should desire to enamel the inlay, remove the wax with alcohol, replace it in the cement counter-die, or invest it in the investment material and, with a clean brush, cover the exposed portion of the inlay with a thin coat of enamel, place it in the furnace until the heat clears it up perfectly. This will sometimes give too high a polish; if so it can be reduced with a cuttle-fish disk. The same precautions should be observed in removing it from the furnace as when baking.

Quite a different procedure is necessary to obtain the correct contour of cavities of the fourth, sixth, seventh and eighth classes, and for an explanation of this method we will consider cavities of the fourth class, mesio-labial-lingual-incisal, taking the inlay, baked according to the instructions under the previous article on contour operations, which gives us a filling slightly larger in all directions than it should be to harmonize with the contour of the tooth. We now remove the matrix and grind the approximal surface on the lathe, using a fine corborundum stone, until the filling will go to place. It is then retained in position by means of a wedge, and with modeling compound an impression is taken of the tooth containing the inlay, and the adjoining one. Before removing the impression, take out the wedge; this will allow the inlay to come away with the modeling compound, fill this impression with a quick setting cement; the part of the cement coming in contact with the inlay should be very soft so as to obtain the required retention. After you have placed a little of this thin cement on the inlay, work a little more powder in the remaining cement and crowd it to place; when hard, remove the modeling compound and you have the inlay in a cement tooth,

showing the proper alignment with the rest of the teeth. A sharp instrument placed between the cement tooth with the inlay, and the adjoining one will separate them. The inlay will be attached sufficiently hard to allow the contour to be ground on the lathe. If the polish is sufficient after using the Hindostan stone, it can be removed from the investment and cemented to place. If further polish is desired, follow the previous instructions.

When ready to set, roughen the cavity, and grind the inside of the inlay with a 3-16 inch fissure diamond disk, so as to engage the cement. The inlay should be kept wet while grinding to prevent darkening.

Harvard white cement should be used in setting all inlays. By mixing a nearly equal amount of water with the fluid, it will set perfectly in ten minutes. Inlays for the fourth class are held in position while setting by inserting a wedge between the inlay and the adjoining tooth.

It is not necessary for cavities in the anterior teeth, to use the rubber dam. A piece of cottonoid placed under the lip, and another piece for the patient to bite on will give you all the time necessary for the cement to harden.

THE SHADOW PROBLEM.

In considering the shadow problem, three things well taken care of will eliminate most of the difficulties in that direction. If the cavity is so prepared that the walls are perpendicular to the surface of the tooth, it will give a body of porcelain whose shadow reflection will be the same at the margin as it is in the middle. This point cannot be emphasized too strongly.

Cavities on the labial surface near the incisal, present the greatest difficulties; the surface of the tooth being nearly flat, it allows the shadow from the thin layer of cement to meet the eye at every angle.

This can be partially overcome by using some one of the transparent gums for the centre of the cavity, placing the cement on the perpendicular walls only.

Much better results are obtained with the gingival cavi-

ties, as the tooth at that point has sufficient curve to prevent the reflection of the cement meeting the eye.

Also, the thicker the inlay, the less is the shadow effect.

The next and the greatest thing which bears on this question is the cement. A transparent cement would overcome the shadow question, but one must get the best results possible with the cement now available.

An inlay that exactly fits the cavity, instead of being the thickness of the matrix smaller, gives the advantage of having the least possible amount of cement between the inlay and the tooth, as the greater the amount of cement the heavier the shadow. Each point gained in this way brings this problem a little nearer solution.

The color of the cement is an important factor and must be considered; with an inlay the thickness of the matrix smaller than the cavity, the line of cement showing, compels the use of a cement that harmonizes with the color of the inlay. Each time the color of the cement is changed a different shadow effect must be overcome, and this frequently results in failure in what might otherwise have been success.

When the inlay exactly fits the cavity, it admits of so small an amount of cement that a certain color can be used for all inlays.

White is preferable as it gives the minimum shadow. This can be overcome by making the inlay about a shade lighter than the tooth, thus counteracting the shadow cast by the cement.

A WORD IN CONCLUSION.

A brief summary of important points in the application of this system of porcelain inlay, is appended for ready reference. It will enable the beginner to feel more confident of his ground and, if faithfully adhered to, will avoid the danger of failure at the start, which is often charged to a new system, when it is more justly attributable to the newness of the practitioner.

Become thoroughly conversant with the theory and practice of this system before attempting to put it into operation.

PLATE XII.

Do not be afraid to cut away the tooth; it will be replaced with a similar substance.

Leave the walls of the cavity at all points perpendicular to the surface of the tooth.

Do not allow your cement impression to stay in the tooth until it is very hard; it will not be easy to remove.

To overcome the difficulty of handling small inlays while cementing them to place, fasten the end of a wooden tooth-pick in the inlay with sticky-wax. If the cavity is nearly round, mark the gingival side of the tooth-pick; this will be a sufficient guide to insure proper placing of the inlay.

Roughen the under surface of the inlay, and the inner surface of the cavity, so the cement will adhere.

Do not finish off the inlay before the cement is hard.

Do not use a coarse stone to grind the inlay.

Scrupulous and exact cleanliness must be observed with every step.

If this system is followed closely, it will elminate much of the personal equation, and will enable the many to obtain perfectly satisfactory results with porcelain inlay.

It may be desirable to reduce a complicated cavity in some of the approximal surfaces to a simple cavity of the second class, which can be done by restoring a portion of the cavity with gold, from beneath.

A pure neat platinum, similar to the mat gold, could be used advantageously to reinforce and fill in a tear in the matrix, by swaging it to place with mouldine.

Plate XII illustrates the appliances which are essential to this system of porcelain inlay work.

The necessary instruments for this system are:

Chisels Nos. 75, 76, S. S. W.

Flagg's instrument, No. 33, S. S. W.

Burnisher No. 34 small, S. S. W.

Gem points Nos. 13, 14, S. S. W.

Gem cavity, No. 1, S. S. W.

Fissure-finishing burs, Nos. 57, 58.

Fissure bur No. 57.

Pear-shaped bur No. 1.
Britton cement.
Arkansas-stone point, No. 5, S. S. W.
Hindostan lathe stone 2½ by 5-16 in.

(The End.)

DAVIS CROWNS AND DIATORIC TEETH IN PORCELAIN BRIDGE-WORK.*

J. ALLEN JOHNSON, D. D. S., INDIANAPOLIS, IND.

It affords me much pleasure to present for your consideration, what might be termed a simplified and improved method of constructing a porcelain bridge, making a new application of an old principle.

To illustrate we will assume a case where it is desired to replace the superior right first and second bicuspids, the roots of the cuspid and first molar remaining, and suitable for abutments.

After preparing the roots as for Richmond crowns, we proceed to make seamless caps for each, in the following manner, viz:—

First make a band or collar for the root, either seamless or soldered, adjust to root and conform to gum festoon, then force it down as far as possible, allowing it to extend slightly above the root. Next, fill the band with Turner plastique or any similar substance, pressing it down firmly onto the root, then remove band and plastique together, placing same with festooned side upward, upon your plastique, having the band embedded so that the festooned side is flush with the plastique. The moulding ring is now placed over the band and filled with fusible metal. After removing the band you have an exact reproduction of the root you desire to make cap for. There are several ways of completing the operation toward forming the seamless cap; but the simplest is to press platinum (34 gauge) over the fusible metal cast of root, working it down roughly with burnisher and finally swaging to sharp outlines on lead counter-die. Should a slight break occur in the platinum it will make no material difference.

*Presented at Indiana State Dental Society, 1903.

The cap is next trimmed and fitted to root, the pin or post, of iridio-platinum, generally gauge No. 16, is forced through the cap into root canal, withdrawing same with cap in place, it is soldered to same with twenty-five per cent platinum solder. The post is allowed to extent about an eighth of an inch above the surface of the cap (Fig. I) purpose for which will appear later.

For the first molar we use a post or pin in the lingual root and one in the anterior buccal; these posts are cut off flush with surface of cap and a third or additional pin is soldered between the first two and extends about one-eighth of an inch above surface of cap, as shown in illustration (Fig. II).

After replacing both caps upon their respective roots, we take an impression in plaster, should the caps not come away with the impression they are carefully placed in proper position, the impression is varnished and oiled and poured with any good investing compound. After separating we are ready for the next step in the operation. Making the truss or bar. For this pur-

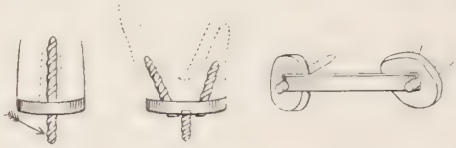

Fig. I. Fig. II. Fig. III.

pose we use the heaviest square iridio-platinum wire (generally one-eighth inch) permissible for the case.

The truss should be notched at each end so that in case the solder during the process of baking should become plastic, there would be no danger of the truss shifting its position—and a still more important feature is that this method of construction renders longitudinal shrinkage impossible. (Fig. III.) A mishap that would render the bridge useless.

After uniting the truss and caps with twenty-five per cent. platinum solder or pure gold, we remove the piece and replace on roots in mouth. Take wax bite and plaster impression in usual manner for bridge-work. Place the truss and cap or bridge frame in the impression before pouring this cast, give the pins a coat of wax, so that the piece can be removed with ease from the plaster cast.

We now come to the placing of the crowns in position preparatory to the building up and fusing of the porcelain. In

bridges of this class I have found the Davis crowns and the Consolidated Dental Mfg. Co.'s diatoric teeth most suitable, on account of their form, and also because either can be ground and polished in a manner similar to the Ash mineral tooth.

For the case under construction the Davis cuspid crown would be selected and placed upon the cuspid post with a small quantity of wax. Next the C. D. Mfg. Co.'s diatoric first molar to suit case would be similarly waxed in position on molar post. The two bicuspids are next selected, and either the diatoric or the Davis crowns will answer, and are waxed in position on the bar or truss. Their position is next indicated with a pointed instrument and a hole is drilled for each tooth through the truss, so that when a pin or post is riveted in place, the bicuspids will set upon the same support as the cuspid or molar (Fig. IV). When space will permit, a supplementary truss (B, Fig. IV) should be used.

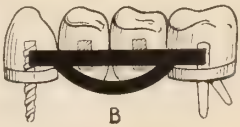

Fig. IV.

The porcelain crowns are now ground to occlude properly with the antagonizing teeth, and then removed and all wax boiled out. In replacing crowns on their respective posts, the interior of each crown should be filled with Close body mixed to consistency of cream, the post is likewise covered and crown worked to position. Having the teeth set up in this manner the case is ready for the first or primary bake. With care the bridge may be removed from cast without deranging the teeth. Placed on fire-clay slab it should be placed in cold muffle. The heat is applied gradually (use the Hammond furnace) driving out the moisture and excluding danger from cracking. With Close body we may easily build up the bridge to desired form, and where required gum enamel added to further the artistic effect of the case.

The application of the foregoing principles in the construction of single porcelain crowns, affords a method of quickly and easily constructing an ideal crown, one combining strength with perfect adaptation to root. In case of fracture of crown a new Davis crown may be cemented in place without disturbing the

cap. A feature which should recommend it to the busy practitioner.

A NEW GOLD AND PORCELAIN CROWN FOR LOWER BICUSPIDS AND MOLARS.*

BY DR. F. R. HENSHAW, MIDDLETOWN, IND.

Advantages.—Strength, beauty of appearance, porcelain masticating surface, may be used for bridge abutments.

Construction.—In cases involving badly broken down lower bicuspids and molars, particularly the former, trim the root as near the gingival margin as necessary to obtain sound tooth structure. Take wire measurement and fit band as for a plain gold crown swaging the lingual instead of buccal surface. Fit band to root in mouth and trim the occlusal end obliquely from

Fig. I. Fig. II. Fig. III.

the linguo-occlusal margin toward the buccal surface, thus cutting away one-half or more of the buccal surface (Fig. 1). The pen upper end of the band should be beveled from within outward to a feather edge. Take a saddle-back plate tooth of right size and shade, trim off lower end of buccal surface until the base is plane (Fig. 2). Grind to fit the counter-sunk upper end of the band allowing the porcelain to extend more or less deeply, as the length of the stump permits. Swage pure gold, thirty-four gauge, backing to base of porcelain, burnishing over edges, bend pins down to come in contact with the lateral walls of band, adjust band and porcelain together, cover porcelain with a little asbestos fibre, flux and solder in Bunsen burner flame. When adjusted to tooth, if the articulation be not exact, grind with a carborundum stone until the adaptation is perfect.

The complete crown will have the appearance of Fig. 3.

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*Presented at Indiana State Dental Society, 1903.

SOME OBSERVATIONS REGARDING CARIES IN TEETH ALONG THE LABIAL AND BUCCAL GINGIVAL MARGINS.*

BY W. C. HESSLER, D. D. S., CRAWFORDSVILLE, IND.

We have all noticed the decay of the six superior incisors. immediately next to the gum margins, and we have excavated these cavities and filled them as beautifully and perfectly as possible.

A large number of the fillings do service and preserve these teeth from further decay for many years, and in some instances the balance of the owner's life. If all labial and buccal fillings stood the test of time, as above stated, there would be nothing more to be said.

However, we find many cases in which we have practiced "extension for prevention," and, within an interval of time much too short for the average life of a filling, we have the patient present himself for examination. When we find that the tooth structure has become disintegrated and softened at the cervico-distal and cervico-mesial margins of the fillings.

We may see, also, an area or zone of the enamel, which has a whitened appearance, as if it had been attacked by the solvent action of a strong mineral acid.

We sometimes find these caries on the labial surfaces when there is no sign of decay on the other surfaces of the same or other teeth.

We may discover them in the mouths of people who are and have been scrupulous and assiduous in their use of the tooth-brush and the various accessories in the hands of the public for the cleansing and preserving of the teeth.

The question I wish to put before you to-day is, "What procedure shall we follow, either previous to or after filling by which we may prevent or at least interfere with the early recurrence of these caries?"

There is a rule in the practice of surgery which says, "First remove the cause, and then correct the lesion."

But do we always remove the cause when we fill these cavities? We remove the decalcified dentin, also attempt to cut into

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the healthy tooth structure in order to cut away the infected portion, sterilize the cavity and fill. Now we have done all that manipulative skill can do to repair or replace the destroyed tooth structure, but I repeat, "Have we removed the cause?"

To do so we must first find it. Before attempting to locate the cause, let us see what condition we find present when we observe this marginal decay. I have found it prevalent in cases of digestive derangement, nervous disorders affecting the organs of digestion, in pregnant women and nursing mothers, and rapidly developing youths and children.

Sometimes these caries will be found in the mouths of apparently healthy persons, but on closer examination one will discover a rather stringy or ropy mucous. This brings me too that which I consider the cause, in most cases, of marginal decay. When we find this stringy mucus we must conclude that there is something wrong at its source. The source being the mucus follicle, or gland, and the product being abnormal, it must be concluded that the function of the gland or follicle, is perverted or abnormal.

If the reaction of the normal mucus is examined, it will be found to be alkaline, but I find the abnormal mucus to be most often acid in reaction. I may say here, that the litmus test will not always bear us out in this conclusion.

I think the alkalinity or neutrality of the abnormal mucus is sometimes due to the presence of the normal alkaline saliva, which is very active during our waking hours.

By reasoning from cause to effect, you will see that I arrive at the conclusion that the cause is perverted functional activity of the mucous glands.

Dr. Louis Jack in his article on hypersensitive dentin, speaks of the acidity of the oral secretions and gives topical tonic treatment for the mucous membrane.

Dr. Henry Barnes, in an article read before the Northern Ohio Dental Society, tells us that a large number of tests have shown the buccal secretions to be normally acid.

I am not prepared to prove or disprove this last statement. The point I wish to emphasize is, that we have not done our whole duty when we have filled these cavities and have not restored, or at least made an attempt to restore, the adjacent tissues to a normal condition. We should have a higher standard than

that of the tinker or cobbler who solders a hole, or puts on a patch at so much per patch.

I have found no specific remedy or method to successfully prevent or inhibit the recurrence of these caries, but I will attempt to outline a treatment in a general way. I begin by advising the patient that it will require some persistence on his part. Then instruct him in the proper use of the tooth-brush, including massage of the gums with the fingers. I have prescribed the alkaline or antacid gargles or tooth-washes, of which there are several excellent ones on the market in the form of proprietary preparations.

Our text-books contain a number of excellent formulæ for the local or topical treatment of the mucous membrane. In some cases I advise the patient to consult his physician; in others I prescribe a tonic systemic treatment.

Lest some may think I have forgotten the staphy lococcus or the strep toococcus and other bacteria and their acid by-products, I assure you that I believe that the most of the caries in teeth are of bacterial origin. However, do we not overlook some of the things more easily seen in our pursuit of this microscopic vegetation? In conclusion I may say that the ideal relations between the patient and his dentist do not yet exist. In too many instances the patient applies to the dentist after much destruction has occurred, and in consequence it is necessary to resort to reparative measures before we dare to think of prophylaxis. I would advocate prophylactic or preventive, rather than reparative or constructive dentistry.

Let us hasten the day when we will be sought, not only for our manipulative skill, but also for our knowledge of how to prevent the destruction and loss of the organs of mastication.

DISCUSSION.

Doctor Kennedy.—The causes of caries at the point in question, I think are the same as in any other part of the teeth. It is due to fermentation brought about there by the lodgment of particles of food substance, or broken down epithelial cells. The only thing is to keep the food away from there.

I think there is a difference in the quality of the tissue. You will find some people whose tissue is easily torn in any way. The hands are easily poisoned, and there are teeth that erupt easily and are almost decayed when they come in. However, there is not much use in talking of causes. I shall say that the treatment is a hygienic condition of the mouth. Some

of these cases should be referred to a physician for systemic treatment. So far as the treatment by the dentist is concerned, I should advise that you insist upon the hygiene of the oral cavity strictly, and insist upon its being kept up.

Dr. Leonard Strange.—In my experience with decay in labial and buccal surfaces of the teeth, I have found most trouble with the buccal surfaces of molars, and as we cannot remove the cause before we repair the damage, mechanical skill is the first requirement. Whenever able to replace *all* of the discolored and softened enamel in these labial and buccal gingival cavities with a proper filling, you will not be apt to have the recurrence of decay of which the essayist speaks.

But we very often find, and especially on buccal surfaces of molars, a complete line of whitened enamel extending from the mesial to distal and including part of these surfaces, with but a small place in the central buccal surface where the enamel has broken through and decay of dentine has begun.

These cases present a problem, to me at least. All of this whitened portion cannot be cut away, as most of the whitened area will be found very hard except a very thin softened layer on the surface, with perfectly healthy dentine underneath.

Even with the best of care a perfect margin for filling cannot be obtained, and we know that sooner or later some portion of this white enamel will soften through and decay will come again. Possibly not just at the margin of the filling, either, but may be some little distance on either side. Here is where careful work will show itself.

Here is where the matter of "detail," spoken of so often in Doctor Sexton's paper and emphasized by Doctor Kirk, comes into play. The essayist says to insist on the patient using prophylactic and tonic washes. But how long can you depend upon your patient following your instructions? Two or three weeks, probably, in nine cases out of ten. The manipulative skill and attention to details on the part of the operator will accomplish wonders. However, the instruction in the use of prophylactics is very important.

TREATMENT OF LESIONS INCIDENT TO THE DENTAL PULP.*

BY J. F. WERNER, D. D. S., ELKHART, IND.

In considering the history relative to the treatment and exposure of the dental pulp, we find many perplexing conditions which tend to interfere with the successful results of our labors. Were it not for impossibilities, we could safely flatter ourselves on the ultimate result. There is no particular branch of dentistry in which so many varied conditions occur. The remoteness of

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the cause and the numerous other influences brought to bear in the conservative treatment of the pulp, make the method of diagnosis only more difficult.

Our object as dental practitioners, the same as in all other operations of surgery, is to assist and restore nature in performing her function and to keep intact the underlying principles harmonious to the relationship of other tissues. The dental pulp, quite like other tissues, being effected by disease, is removed and replaced by other means. In general, it may simply imply the vitality or life of the pulp and anything tending to impair the function of any tissue or changing its physological action will naturally, in time, cause atrophy of that tissue; therefore the many pathological conditions presented to our view must be met with accordingly, and to enter into detail, the nature and description of all these lesions pertaining to the pulp can receive but partial consideration.

The pathological tendencies and normal characteristics which must often be considered in the conservative treatment of lesions of the pulp are:

First: The minuteness of the apical foramin tending to restrict the circulation to these parts.

Second: The consideration of the nervous distribution beneath the odontoblastic layer, rendering the organ highly sensitive when the circulation is increased from the effects of irritation.

Third: The arrangement of the capillary circulation tending to lessen the diffusion of inflammatory action, and

Fourth: The absence of lymphatics depriving the pulp of the power to effuse insoluable medicaments.

The pulp in its normal state is not a highly sensitive organ, but when subjected to internal influences, either from high or low temperatures or from chemical or infectious influences, that owing to the disconnection or feeble attachment to its walls together with the susceptibility of pressure, that a shock so severe will render recuperation almost impossible. Therefore, under these conditions, when irritation has extended, we have the so-called hyperesthetic and hyperaemia conditions, which again produces stasis by restricted circulation, and by the degeneration of cells we have the secondary formations commonly known as pulp nodules.

We are all well aware that the resistance offered to treatment by the pulp varies in different people and depends largely upon th nerve force exhibited by them So the dental surgeon should use tact and ingenuity in preparing himself, as well as that of his patients, and use sufficient time to enable him to make his operation complete. But the fact that it is a mere tooth and that there are many more in the mouth and perhaps more to follow, make us forgetful of the fact that the vacant spaces in our dentures serve only to impair the functions of other organs for whose preparatory influence they were intended.

As the pulp with its nutritive influences maintains mostly the vitality of the tooth's substance, it is highly important that when this organ is encroached upon by influences which tend to destroy it, it becomes necessary for us to assist nature in preserving the same, when conditions favorable to that object are in view. As heretofore stated, there are impossibilities, and our only efforts can be in simply trying to do the best we can. In the majority of cases presenting themselves for treatment, a dentist should be able to save at least 98 per cent. of all his cases and allowing this exception, there are times when 100 per cent. should be allowed, provided the proper attention by our patients is considered.

I see no use in the ever-complaining practitioner who is constantly complaining of the unsuccessful treatment of his cases, the bothersome conditions which follow, whether it be from the chances he takes or whether it is simply in his manipulations, is difficult of comprehension. Of course I would not presume to think that to cap an abscessed pulp would be taking a chance in the right direction to preserve the tooth or to make one treatment of cement and iodiform, filling the pulp to do the same. Would you? We have rational treatments for all these cases and a dentist who wishes to conservatively practice according to principles and directions laid down in our text-books needs have no fear of the ultimate success of his labors.

The pulp is usually affected either by accident or caries. If by accident, it is mainly due to the abnormal conditions and locations of the pulp. This is more readily observed in the central and lateral incisors consequent only upon the broadened conditions of their surfaces, the cornua materially extending to the mesio or disto-incisal angles. So in excavation for the filling of

cavities under such conditions, we should be more careful. The more frequent causes of exposure are from caries. As the progress of decay advances and we are placed in position to daily observe the same, we are also in position to more readily diagnose the same.

When cases present themselves with slight irritation, where no exposure has actually occurred, caused possibly by the nervous irritability of our patients, or what is generally termed the temperative stage, we are justified in attempting to preserve the same. This is generally accomplished in ways commonly known to all, but one in which I am particularly partial to is simply this: After the cavity has been washed with warm water, thoroughly dried and made aseptic by the use of a solution of carbolic acid, use a small disk of hard gutta-percha, sufficiently large to cover the supposed area, compress the center by the use of a round burnisher and place these in a small portion of chloro-percha, placing the disk in position and covering with a coating of oxyphosphate of zinc, forming a hardened surface upon which to work; a small platinum disk may also be used in the same manner and especially in smaller cavities is it preferable. It is just here where many operators wilfully make mistakes. The less that is used of the so-called mummifying paste, the more secure we are from bad results. While they, for a time, will keep the pulp in a quiescent state, owing to the sedative properties they contain, yet it does not in any way remove the tendency to further trouble, as it will eventually reappear in conditions more aggraved.

If the pulp must be removed, the sooner the better, and not wait until the entire pulp cavity and the canals are totally obliterated by secondary formations. If the pulp will remain in a quiescent condition under the former treatment for a limited length of time the cavity may be permanently filled. I fail to agree with those who say they are able to permanently protect the pulp without irritation after hemorrhage has actually occurred. It either produces immediate death of the pulp or, when found in healty individuals, the irritation may continue indefinitely, but will also eventually atrophy from anæmic conditions caused by restricted circulation. And again, were it possible to cap that pulp, or, in other words, place something foreign to protect it, it is certain that no pressure could be made to completely close the small rupture without inflammatory action, and to place a cov-

ering over this aperture without contact with it, the small space is usually filled by nature, which exerts her force to close the same.

Like all other lesions, a serous exudation is thrown out, which in turn calcifies, forming a lamina of bone to protect itself. If this exudation could be further prevented and nature could permanently seal itself, the results would be no trouble, but it continues, and even the entire pulp, together with the nerve fibre, becomes calcified.

You no doubt have observed in the removal of nerves in which this action has occurred, that the fibres are either in the same hardened or toughened condition or it has entirely calcified, enabling us to sometimes remove the entire calcified fibre even to its periphery. We no doubt realize the peculiar symptoms that manifest themselves in these cases, and experience alone can assist us in our diagnosis. There are many different conveniences used and applications suggested in protecting the pulp and each of us practice our own ideas.

The methods most commonly used in devitalizing pulps are by the application of arsenous acid, cataphoresis and pressure anesthesia. In all these applications there should be complete exposure of the tissue to insure the best results. However, in sensitive conditions these results may be obtained by repeated applications, but the one most preferred is cataphoresis, as more force can be applied to the parts with less external pressure. If this and pressure anesthesia would be more frequently resorted to, there would not be the many annoying conditions following devitalization. Especially is this true in anæmic conditions where atrophy has taken place and where the pulp may be seen throbbing under increased irritation. If arsenous acid were applied in these conditions and the pulp thoroughly sealed, it would only tend to increase the tension upon the tissue by confining within the cavity those inflammatory secretions which nature is trying to throw off

Of course devitalization will take place, but only after severe suffering In almost all cases where arsenous acid has been used, inflammation occurs and in my belief produces many annoyances which we would not otherwise have to contend with. In aggravated cases the extended inflammation prevents absorption and repeated applications produce no better results. Therefore, in particular death of the tissues, where absorption will not

readily take place, some form or other must be employed to destroy sensibility and cataphoresis or pressure anesthesia hold equal sway in performing the same. But when atrophy has actually taken place with some sensibility remaining, carbolic acid may be resorted to; it coagulates the albumin or protoplasm and by gradually working it through the tissue, the same can be readily removed. A solution of sulphuric acid may be also effectually used.

In opening cavities for treatments of pulps we should not hesitate to freely remove sufficient of the tooth's substance to enable free access to the interior of the cavity, cutting mostly to the cornua of the pulp. This should be the vital point of exposure. In opening the pulp, an instrument with a rather broad cutting surface should be employed, and then in a longitudinal direction with the surface to be exposed. By so doing, proceeding with care, the broad surface will pass gently over the pulp, without being forcibly pressed into the same, and as the reflection of the pulp can be readily seen through the thin lamina of bone intervening, the sharp angle can then be easily made to raise this thin section without much inconvenience to our patients and much satisfaction to ourselves. Instruments with rounded cutting surfaces, in my estimation, cannot be advantageously used.

Now that the exposure has been made complete, the various methods as heretofore stated may be applied and the pulp removed. It often happens that in removing the pulp either with cocaine or by pressure, that portions of the nerve fibre cannot be removed at once as the nerve canals are too small to admit of a small broach, and as the effects of the cocaine has passed away the unremoved portion would again regain its sensibility. So after anesthesia has been made complete and the entire nerve fibres in the larger canals have been entirely removed, the smaller canals should be immediately treated with carbolic acid and forced in fact even as an after treatment to the periphery of all the canals to be sure that sensibility may be completely overcome.

After treatment is complete, the pulp and canals may be filled in the usual manner. These few remarks may be considered as simply suggestions as considered from the mass of information which this subject may contain. The field in each

and every stage of this procedure, if made exhaustive, would be sufficiently large to be a subject for discussion in itself. And now that these few suggestions have been hinted at, I hope that through the following—

First. Treatment of the pulp previous to exposure.

Second. Capping the pulp,

Third. Devitalizing the pulp,

Fourth. Removing the pulp; and lastly, filling the pulp, that sufficient has been said to create a thorough discussion.

DISCUSSION.

Doctor Barnhill.—I fully agree with the essayist in that the remoteness of causes and influences brought to bear make the method of diagnosis and treatment difficult. The minuteness of the apical foramen—the consideration of the nervous distribution beneath the odontoblastic layer, and the arrangement of the capillary circulation, we cannot as a rule get by diagnosis, but externally we have some points of consideration to which we must look, viz.: Is the pulp exposed to that extent that there is only a thin layer of soft, spongy dentin covering it? Has the cornua been exposed? Has the pulp been infected? Is there now, or has there been, any extensive irritation? What is the general condition of the mouth and teeth? How is the health of the patient? Is it possible to see the patient at such intervals as we desire, and what is their temperament? Has the pulp been exposed by accident to that extent it will cause hemorrhage?

All of these points, I say, should be considered in capping a pulp. If there is any doubt about any one of them, do away with the pulp at once and you will retain the good will of the patient. I agree with the essayist again when he says that if hemorrhage has taken place, a tooth cannot be saved by capping.

I have found a great many cases of attempted mummification, but not one of capping, at least one I was able to recognize as such.

The near exposure of the pulp is often unexpectedly found in the preparation of cavities.

Understand me, I would not sacrifice a pulp of this sort. By placing some non-conductor over the pulp, which is not an irritant to the sensitive dentin, this sort of cavity may be filled and give good service.

In regard to the devitalization of the pulp, I cannot entirely agree with the essayist in his procedure.

He says we should have a complete exposure when we use arsenious acid. I have had as good results as one could wish when I had simply penetrated the enamel, put in the arsenical treatment, covered it with cement, and have removed the pulp in from two to seven days.

On the other hand, I have had the most miserable results where I had

a complete exposure, and I will add that where I have exposures accompanied by inflammation or congestion, I reduce this before applying an arsenical application.

I have had excellent results removing pulps with cocaine under pressure, but it is almost useless to attempt this when a pulp has been previously treated with arsenic. The inflammation that is there makes the work so painful that in the majority of cases the patient cannot endure it.

The most gratifying results are obtained by administering nitrous oxide gas. We may have a cavity with the pulp not sufficiently exposed to take up the cocaine and it would be too painful to make one; then by giving the patient gas we can work with perfect ease, knowing that we are not causing the patient any pain.

After exposing the pulp, if we do not have time to remove it under one anesthesia, and we do not care to give them any more, let the patient return to consciousness and proceed with cocaine under pressure and remove the pulp.

There is not one of you present but has had those extremely nervous patients to deal with, and one hour's work for them will absorb almost a day's energy from you. And when she is gone you will probably say, "It would please me if she never came back."

Gentlemen, give them gas. You will not know you have seen your nervous patients.

Doctor Chadwick.—In regard to the capping after hemorrhage, I have not had much experience along this line. I have capped a few pulps after accidental exposure, and after three or four years of service they are in apparently good condition. I don't think, however, it is good practice to do very much of it. Where no actual exposure has taken place, I think in the majority of cases pulp can be saved. I believe we ought to save all the pulps of teeth we can. I don't believe in this indiscriminate devitalization and taking the pulps out of all teeth from cavities where there is no exposure. As to the mode of devitalizing, I have used pressure anesthesia with the greatest success. I think in the majority of cases we can use pressure anesthesia and do away with the after effects of arsenic.

Doctor Werner.—I do not believe in devitalizing all pulps where there is a cavity. If I believe the pulp is partially affected, there are means by which that can be tested; if not, I do not hesitate to devitalize the pulp. I think we run too many chances in keeping those pulps and then having trouble afterward.

As to the effect of arsenous acids on tissue, I wish to be correctly understood. There are cases where the dentin is extremely sensitive. Arsenous acid has its effect, but I believe there are other means and methods which we can employ without the use of so dangerous a drug. I don't think it is advisable or necessary to use anything of that kind. If the teeth are sensitive in that manner use the nitrous oxide gas.

As to the hemorrhage having occurred, in such cases I have never been successful in keeping the pulp alive. I might for a short time, but that is where a great many of us make a mistake. When the pulp is par-

tially exposed we endeavor to save it by capping, either with cement or iodoform. This keeps the nerve in a quiescent condition, but the inflammation has already extended, producing secondary formation. Of course these calcifications can take place, not alone from the exposure of a pulp, but also from defective circulation. I draw the line on all mummifying pastes, and draw it very sharply.

PRESSURE ANESTHESIA.*

BY R. B. TULLER, D. D. S., CHICAGO, ILL.

I use the term "Pressure Anesthesia" as the title of my paper, because it is the term we are most familiar with in connection with this pressure method of anesthesia; but I am inclined to think the proper term is "pressure cataphoresis." I take it that infiltration of the tooth tissues, whether induced by electricity or pressure, is cataphoresis.

Pressure anesthesia implies an anesthesia induced by pressure *per se*. If the liquid employed is simply *an agent* to the force applied, such as water would be, and anesthesia can be produced by the pressure, the term pressure anesthesia may not be improper. But while I have heard that a condition of anesthesia can be produced in that way, by water, I pin my faith largely to the introduction of a little cocaine with it. I have never tried water alone under pressure, because I believe that if water will bring results, the introduction of cocaine will make it doubly sure. In the case of an exposed pulp, the cocaine solution coming in contact with it affects and influences it enough so that a little pressure will be tolerated, which may be gradually increased until a force of many pounds can be finally exerted. I doubt if simple water, by lying in contact with the pulp, will produce initial anesthesia that permits of beginning the pressure. On the other hand, we know cocaine will do it, and what is it, if not cataphoric action? We are inclined to associate cataphoresis entirely with electricity, because our familiar acquaintance with the word came with its introduction into dentistry with the electric current.

To the best of my understanding, this so-called pressure anesthesia did not come to the knowledge of our profession heralded by any scientific discovery and investigation, but crept in as a se-

*Read before the Indiana State Dental Society meeting, held at Indianapolis, 1903.

cret for which the first users had to pay a pretty good fee and give a pledge to secrecy. Who the discoverer was I do not know. I do not know that I ever heard or read a scientific discourse on the subject.

In presenting the subject here I do not come prepared to give any scientific dissertation, but to bring before you some observations of my own in experimentation and efforts to use the pressure method in my practice. That it has merit I think no one can doubt or deny, for many users of it can testify to more or less success. Personally, I consider it a boon to humanity—including the dentist who has troubles of his own, as well as the patient that this method very often does much to relieve. It is not available in all the trials and tribulations of the dental chair, but it overcomes some of our worst ones very often. It is a simple operation, and while simple and inexpensive, I believe it can be shown to be more positive, more expedient, more certain and more satisfactory in results than the elaborate, cumbersome and expensive outfit for electric cataphoresis so commonly in use in dentistry a few years ago, but now almost entirely abandoned. You all know the troubles of the electric method. I need not take time to enumerate them.

There are some things in the pressure method to be found out and better understood, and that will come with a more extended use. That it is not more widely and more frequently used to relieve the sufferings of patients and the strain on the dentist in certain operations, is due largely to the fact that the principles of the process are not well understood. Some have ventured in an uncertain way, and failing through lack of thoroughness and perseverence and sometimes entirely unfavorable conditions, have given it up. The technic of the process must be observed with care and accuracy.

And again, there are the "doubting Thomases," who cannot understand and hesitate to believe that a liquid substance can be forced into and through the hard substance of the tooth to the pulp, or that an exposed pulp—especially an aching one—can be pressed upon without causing pain instead of relieving it. But this has been done over and over, and can be done again, and it is no more or less than a Godsend to many shrinking, sorely afflicted people who must come under our care.

Some teeth, or some conditions of teeth or pulps, make them

more difficult to handle than others. Some conditions preclude the treatment entirely, unless possibly we may resort to expedients that I shall call attention to later. Usually the infiltration of dentine may be quickly accomplished, for full force can be applied at once, a force equal to several hundred pounds to the square inch. Secondary deposit of dentin sometimes interferes with our success, and occasionally something we cannot account for; but usually it is a fault in our manipulation or something that could be overcome if we could locate it. I have learned to be persistent and repeat. I have discovered that a very minute quantity of cocaine solution is effective if made to go exactly where it is wanted without waste. That means being perfectly confined under pressure. The delay in getting anesthetic results is often due to an oozing out and wasting that we are not conscious of.

If I am not mistaken, electric cataphoresis, at its best, consumed some twenty minutes or more to produce anesthesia. In favorable case I have anesthetized and taken out a pulp in three minutes by the pressure method, using my method of confining the liquid. Usually it takes five or six minutes, and in some obstinate cases fifteen or twenty minutes have been consumed. Persistence is a jewel in this work. It is so easy to quit pressing when your fingers get tired, and so difficult to keep up a continuous hard pressure for one whole minute, not to mention five or six.

My first attempts at pressure anesthesia were absolute failures, but I saw and heard of others who met with success, and feeling I could do what others did, I persisted until I succeeded in an unexpected moment, and that one success was worth all the vexations of the failures. It set me to studying why I had failed, and I concluded it was largely due to my not being able to confine my medicament closely enough, and I realized that but few cavities are so shaped as to lend themselves to the confinement of a liquid. Building up walls of cement or gutta-percha to make a well or pocket was not always successful. The increasing pressure would cause a yielding and consequent leaking. Time was consumed in doing this and often with no good results.

I will say that in reasonably deep cup-shaped cavities with good unfissured walls, there is perhaps no better way than using the usual plug of soft unvulcanized rubber pressed in with a

suitable instrument upon the cocaine saturated cotton. If the opening is so plugged that the liquid does not regurgitate, success should follow. But, as I have said, we find so many cavities so shaped that we could as easily confine a liquid on our thumb-nail by that method.

With so many such cavities to contend with, the thought occurred to me to try to confine my solution without regard to faulty walls or any walls. The result of my study along these lines was that I simply reversed the order of things, and confined my liquid in the end of the instrument I used to press with. In other words, I fashioned a piece of soft rubber with a chamber in it, and fastened it to the instrument. Into the little chamber I put a small pellet of cotton saturated with the anesthetic agent, I can press his down on a piece of glass or my thumb nail without the escape of a particle of the liquid contents. If it is a case of exposed pulp, I place the opening over the exposure, generally warming it a little to avoid thermal shock. The pulp takes up enough cocaine by simple contact to permit of a little pressure after a moment or two. The pressure is very gentle at first and gradually increased to a very considerable force before we are done, often giving several hard thrusts at the last. The confining of the liquid is done by the edges of the rubber fitting close to the floor of the cavity around the exposure. It will fit the irregularities readily unless they are extreme. Sometimes it is necessary to reduce the inequalities, but that is usually done in removing loose decay and debris, which, of course, should always be done before attempting the pressure operation. It is rarely that a pulp will yield in less than five minutes, though some are more susceptible than others, and the abnormal condition of the pulp may be of a nature not easily affected.

If it is a case of obtunding sensitive dentin, we simply place our rubber tip on the floor of the cavity and press toward the pulp chamber.

At first I labored under the mistaken idea that if I expected to obtund sensitive dentin in a cavity I wished to excavate, I must have it entirely saturated with the cocaine solution. This, gentlemen, is not true. The little rubber tip I have designed covers comparatively few of the dentinal tubuli, but enough, I find, to convey my solution to the pulp, though the layer of dentin be thick; and when the pulp is influenced it affects all the nerve

fibrils that radiate from it. The whole crown portion of the tooth is thus obtunded, so that not only can we excavate this cavity wtihout pain, but another if there chance to be one in the tooth. If it is our wish to get into the pulp chamber we can do it without pain; but when we have exposed the pulp we should infiltrate it specially, else in trying to remove we may find sensitivity.

If we do not wish to expose the pulp, then especial care is needed. With nerves anesthetized, there is no warning given as in a case of full vital functions, and this must be constantly uppermost in mind with the use of burs that may produce injuries through the heat of friction. It is perhaps safer to use hand excavators as much as possible, and those cautiously. If an operator is not sure he can excavate without uncovering the pulp, he would do better not to obtund. In fact, there is a large majority of cavities, perhaps, where we would not think of using anything, being able to get along well without. We have, however, multitudes of cases and conditions where, as I have said, it is a Godsend to both operator and patient.

Although I have no data save my own experience and hearsay evidence, I am satisfied that the infiltration of cocaine into the tooth does no injury, except where it is carried to the extreme, as in an exposed pulp where we intend to extirpate. In such cases I think circulation may be suspended and never resume I know this: that I have had occasion to treat an aching tooth by the pressure method, and not having time to do more, have packed gutta-percha hard into the exposed anesthetized pulp and found it lifeless in twenty-four or forty-eight hours, with no pain in the interval. I am not prepared to say it is good practice, but on several occasions it has worked out all right, and as I somehow expected it would. The question is, would the result have been the same had I simply put in a stopping in the usual way without pressure, or left it open? I have not tried it and cannot say.

When I find sensitivity in a root of say an upper molar, when some time has been consumed in opening into and fishing for the pulp in the other two roots, I do not know whether it is a return of sensitivity or if I did not carry my pressure far enough. The remedy, any way, is to put some cocaine in the root and press it by the most available means—generally a piece of soft rubber or gutta-percha, though a rubber tipped instrument may often be used.

A CASE IN PRACTICE.

To lead up to another feature of this pressure treatment, I will relate a case in practice. About three months ago I had occasion to cut off some eight or ten sound teeth to use for supports of bridges in regulating a serious malocclusion. Some were upper teeth, some lower. The patient was past 60 years of age. The teeth had no cavities to operate in, so I had to make openings through the enamel at the most available points. Placing my rubber cup over these little openings, I forced cocaine in by good hard pressure and thrusts. I bored and treated alternately some three times before getting to the pulp chamber, which was entered painlessly. I then dosed the pulp thoroughly, opened into tooth and removed. Some of the lower teeth simply had to be ground down, but rather extensively, in one case involving the pulp, but I used cocaine under pressure on the top of the tooth in every case as soon as I got to sensitive dentin and finished the grinding painlessly. The nerve or pulp referred to above was uncovered by grinding, but with no pain. In an hour and a half I had anesthetized and taken out six pulps and put in dressings. The teeth were incisors, cuspids and bicuspids with two roots. If I had done this by any other process known to me, especially the arsenic, it would have taken a good many sittings of considerable time each, and there would have been more or less pain, which was entirely avoided by the cocaine treatment. I asked the gentleman how much I had hurt him, and he said there was barely a suggestion of pain on getting through the enamel, but aside from that it was no more than paring his nails. My patient was a man crowded with business affairs, and he appreciated the saving of time as well as the saving of pain.

Now the manner of performing this work, making little pits through the enamel, suggested to me a way to handle many other cases where cavities are obscure or in difficult places. Oftimes we may find other defects in the tooth we want to operate on, and may open and utilize them to apply the cocaine. Those shallow cavities at necks of teeth are available, and, by the way, they are usually highly sensitive and can usually be quickly obtunded by the pressure treatment when we wish to fill them.

And now the question arises, are we not justified in many instances in making a pit in sound structure if need be (but utilizing a weak spot if we can that would likely need filling in the

near future), using judgment, of course, in not selecting a conspicuous place, but one where the least damage would be done? Of course the pit would be repaired by filling We all have patients that are so extremely sensitive that it is almost impossible to do anything for them. They would readily give their consent to the extra pit. There are many cavities occurring between all the teeth where we could not apply pressure anesthesia one way or another except boring in at a more available point. And are we not justified in many cases in proceeding in the manner I have demonstrated that it can be done?

Operations may be facilitated as to time by giving a little to obtunding; and if one has an instrument ready to pick up and go to work at any stage of painful cutting and drilling, he is equipped so as not to waste much time.

Is it not our duty as dentists, bearing the stigma in a half serious, half jocular way, of being worse than the Spanish inquisitors, to study methods most seriously and earnestly that reduce or avoid pain?

DISCUSSION.

Dr. J. W. Stage. I think, under ordinary circumstances, any one who understands the use of the drug and also the manipulation of instruments can successfully anesthetize and remove pulp in this way.

Doctor Henshaw.—I would like to ask Doctor Tuller what solution of cocaine he uses.

Doctor Tuller.—I use perhaps a saturated solution of cocaine. One per cent. has been used successfully.

Doctor Henshaw.—What is the vehicle?

Doctor Tuller.—I put a drop or two of water on a slab and put a few crystals of cocaine on it. I do not use it any particular strength. I do not confine myself to any particular anesthetic agent. A dentist can use anything that is available. I have heard of different things that different people are using in the same way that produce the same results. My experience has been altogether along the line of using cocaine, a saturated solution or less, simply putting a few crystals in a drop of water.

Doctor Henshaw.—One day I was removing a pulp, and simply picked up by chance a bottle, saturated a small piece of cotton and picked up on that a few crystals of cocaine, making a thoroughly saturated solution. The result was instantaneous. Gentlemen, I can assure you that in my practice in the last four years I have not had a case where I failed to get perfect anesthesia by this method. I have not used the instrument Doctor Tuller has devised. I have seen it and I believe it is an excellent instrument.

While pressure has a good deal to do with this, it is not really pressure anesthesia. You may take a small pledget of punk, saturate it with a solution of cocaine, seal it and leave it alone for half an hour and you will have perfect anesthesia. The pressure merely hastens anesthesia.

Doctor White.—For two or three years I have practiced this method of taking out pulp, but I have not had as good results as the gentlemen who have preceded me. Speaking of getting two hundred pounds pressure on a pulp, I doubt if you can get that much pressure on a pulp. I think it is principally lateral pressure on the tooth.

Doctor McClanahan.—For myself, I have never succeeded a single time. I don't know why I have not succeeded. I never have obtunded a pulp or nerve, it seems to me, in the slightest degree, although it might be fully exposed.

Doctor James.—I wish to offer a few suggestions, which may account for some of the failures.

I have used the pressure anesthesia. I have not used arsenic, I think, half a dozen times in three years. Pressure anesthesia has been the greatest help to me of anything that has ever come to my hand. I find that by making the solution I use, which is extract of suprarenal gland, a preparation of Parke, Davis & Co., with a little of the cocaine, I have good success. Never use an essential oil in the cavity before you apply the cocaine. If you do, it simply retards the effect of the cocaine. I had a case in my own practice last week where the cavity was in the lower second molar between two teeth. I excavated it enough so I could wipe it out and fill it with a quick-setting cement, and immediately drilled it through the crown of the tooth and devitalized the pulp. It was aching and I could do it this way much more readily than I could to cut the entire cavity out.

Doctor White.—I never use arsenic until I have tried the pressure anesthesia. I have tried almost everything everyone has suggested, and the per cent. of failures has been very small. One of the speakers spoke of excessive hemorrhage. I remember only one or two cases I have not been able to control with peroxide of hydrogen. I invariably seal the canal immediately on getting it thoroughly dried. I never use any medicine in the cavity except the peroxide.

Doctor Todd.—I see there is a point in this that none of the speakers has touched upon, and that is discrimination. We find that people neglect their teeth until they ache and then they come to the dentist. In those cases you run across three conditions in the nerve. The first is where the nerve is healthy; the second is where the nerve is half dead, and the third is where it is entirely dead. In the first condition pressure anesthesia never fails of effect. In the second case, it will take effect in five minutes. In the third case, you cannot do anything with it. In the second condition you have to resort to arsenic. In the first condition you need never use arsenic, and in the third condition, probably sealing the cavity up with a little carbolic acid or something for a few weeks will completely devitalize the nerve without any arsenic. The most severely necrosed bone I have

run across was from reabsorption of arsenic. I have never known it to be a fact that anything more than a soreness followed the use of pressure anesthesia.

With the pressure anesthesia, just as soon as you stop the hemorrhage you can fill the root canals, fill the crown or put on an artificial crown and dismiss the patient with the assurance that soreness will only be present for twenty-four hours. For the past five years I have kept a complete record, and I have only one case where anything like an abscess developed. The cases that I have known of that have had abscesses from arsenic are legion. I hold this as one of the great advances, not only for the saving of pain, but for the saving of teeth.

Doctor Byram.—I have used the old method of placing a solution of cocaine in the cavity, using the pressure in the old way. If any of you have not tried this scheme of Doctor Tuller's by which he holds the solution in a definite place, I want you to try it. I have been surprised in many cases at the rapidity with which you can anesthetize the pulp. I assure you there is not nearly so much pain in anesthetizing it with this instrument as with the old method.

Doctor Kirk.—We have tried this method in our office and we have seldom had a failure.

There is one thing I should like to mention, and that is the after treatment. After a pulp is removed, to thoroughly cleanse out the cavity we use iodoform and carbolic acid. I haven't seen a case where we have had trouble with this treatment, and it stops all future trouble.

Doctor Hessler.—Doctor Tuller spoke in his paper about reducing the sensitivity of the dentine. I should like to know if any one here has had success in reducing the sensitivity where the shell was rather shallow? I should like to know how deep he can reduce that with one application. I have tried it in many cases, but I don't manage to obtund very deeply with pressure anesthesia.

Doctor White.—I have had varied success in using pressure anesthesia in excavating cavities, but in a great many places I have excavated without any pain whatever after the use of cocaine in very sensitive teeth. I have one patient in particular who absolutely refuses to let me do anything until I have used the pressure anesthesia, especially in excavating the front teeth for even a small gold filling. In that case, in particular, the results have been entirely satisfactory.

Doctor Jameson.—I have been at both ends of this proposition for a long while. I think in the main that all we want is a pure drug in the right condition with the requisite pressure back of it. I don't think I have used arsenic more than two or three times in the past two or three years, and in those cases I was unsuccessful. I found that in cases where I could not get the effect with a local anesthesia, I could not get it with arsenic. I think nine-tenths of it is in the manipulation.

As to the painlessness of it. I think in proportion as the pulp is healthy it is easily affected. When a pulp is congested we sometimes have trouble. Where we have a pulp that has been exposed for some time and

is not in a sterile condition we ought to use a sterile solution to pump into it. As to the hemorrhage, I think in a case where there is a free hemorrhage, if we will let the tooth bleed for some time, and eventually let it rest, we can fill the tooth at that time without further trouble. Where there is no hemorrhage I prefer to pack it loosely. As for iodoform, I see no use for it in a case of this kind.

Doctor Redmon.—The gentleman who spoke of three different conditions of the nerve expressed my opinion. If I find a tooth where the nerve has been exposed for some time I do not always have success with the pressure anesthesia. Where I have a hemorrhage, I seal in some antiseptic treatment for a short time and then have the patient come back.

Doctor White.—On that line I have found that almost invariably where I did seal them I have had sore teeth. Where I filled them immediately there is possibly a little soreness for a day or two, but after that I never hear of them.

Doctor Stevenson.—I have had some trouble where a tooth has been treated by the patient himself, probably with carbolic acid, and the pulp is in such a condition that no medicine will penetrate.

Doctor Todd.—Where the capillary circulation is dead you cannot force cocaine or any other solution into that pulp; it will not take it up, I don't care how long you press, unless you press for half an hour. There are conditions where pulps are just between the two. Then by careful work and patience you can force it through, but you will have to drill down to the pulp, and by using four or five times the usual pressure you can get all the pulp extracted. I have had cases where it has gone instantly to the end of the canal, and others where it would not.

As far as hemorrhage is concerned, I have found it is almost invariably caused by the large opening of the nerve end of the root canal. In that condition one has to be careful to get all the nerve out.

Doctor Sparks.—What do you do when you don't succeed in getting all the nerve out?

Doctor James.—I would suggest the use of sulphuric acid immediately after it is anesthetized.

Doctor Barnhill.—Has any one ever had a discolored tooth when pressure anesthesia has been used? I have only had one, and I have been using cocaine pressure for quite a while. I used always to drill up to the cavity regardless of bleeding, but recently I had a case where I removed the pulp with cocaine pressure, sealed it up and sent the patient away. In a few days she came back with the most highly discolored tooth I ever saw. It was sore, and when I opened it, it required two weeks' time to get it back, and I could not fully do it then. I concluded from that it was policy to leave the tooth open. I would like to know if any one else has had such an experience.

Doctor Tuller.—I would say, in the first place, my object in coming here was not to boost an instrument that I invented, but to get at the truth as thoroughly as we can in regard to pressure anesthesia. I know

that in my own experience in my early efforts at pressure anesthesia, with a plug of soft rubber behind a piece of cotton, I failed almost invariably. I could not account for it, because for one reason I did not thoroughly understand it. I had heard and read about it, but when I tried it I did not succeed any better than Doctor McClanahan. In one case I had a favorable cavity for it, a nice little cup-shaped cavity, and I had such good success I determined to follow the thing up more closely, and find out why I failed in other cases. My conclusion was that I had not been able to confine my anesthetic agent; consequently I began to think it over and I concluded I could succeed by using this little rubber tip. I made the instrument myself. A great many people asked me to put the instrument on the market and I did so. It works very charmingly in a large number of cases. I do not say this to advertise the instrument, but to substantiate what I say. If Doctor Henshaw has a better method than that I would be just as glad to have it introduced into the profession and made as widespread as any other method. If he can apply any remedy to a tooth without the pressure and get the same results, that is the thing we want. So far as I am concerned, I never found anything that I could place in a cavity and leave in there any length of time that would produce any appreciable results.

Doctor Henshaw.—I think you misunderstood me in regard to the pressure. I use pressure, but I say the pressure is only an adjunct; anesthesia is possible if time was given without it. However, I use it in every case.

Doctor Tuller.—I think perhaps if we left it in over night, or something of that sort, we might have anesthesia in the morning, but I know that with this we have been able to produce quick results, and as it is always at hand and ready for use, I speak of it. Sometimes three minutes is sufficient with this; in other cases it takes longer.

I think the main feature of the thing is that we have got to confine whatever agent we use in such a way that we get the pressure on it and force it into the pulp. Some gentleman spoke of doubting that we could put two hundred pounds pressure on a pulp. I did not say that. I said that we exerted a pressure equal to several hundred pounds on the square inch. That is a different proposition. If you will take the size of the end of the instrument and multiply it by the number of times it would go in a inch square you will see you have a different proposition.

In regard to the sensitive dentine. I stated a case which was a sort of wholesale operation, where I had no cavities whatever to work in. All the cavities in the teeth were filled, and I felt it was better to open through the enamel than to go through filling. Some of the teeth had no fillings. This was a case of either taking teeth out and making two plates or making bridges. I simply went through the enamel until I struck sensitivity. When I reached that point I stopped and applied the treatment, and continued in that way. I put this little instrument right over the pit, filling the cup with the anesthetic agent, and the cavity as well. In forcing that down I had to use a great deal of pressure. The pressure should be steady and constant. When I got tired I stopped and bored a little deeper, and if I

found it sensitive, again I repeated the operation. In that way I got clear to the pulp in each case without serious pain. Often when you are near the pulp chamber you will find that you have anesthesized so thoroughly that your bur drops into the pulp chamber unexpectedly, with a sort of *chug;* you will find it does not cause pain. It dropped into two or three chambers in that way when I was not expecting it and it went in with considerable force. As soon as I get through to the pulp I make it a point to try the pressure treatment a little more thoroughly so as to get the pulp anesthesized to the apex. I find that the pressure treatment will send medicine through any thickness of dentine clear to the pulp. In the case I spoke of in the paper I ground off several teeth. They were elongated and I had to grind them down. I told the patient I might expose the pulp, and necessarily I would have to cap those teeth, but I was going to grind them down as it was absolutely necessary to shorten them. I ground until he felt sensitivity and then I applied the instrument squarely on top of the teeth and forced in cocaine in that way. After a minute or two of pressure I could go on with the grinding. When he felt sensation again I again applied the treatment, and so on until the work was finished. In one case I did expose the pulp by grinding.

I don't think there are any more failures in taking the pulp out in this way than we have in taking it out with arsenic. The other day I found a case where I failed with the pressure method. I then applied the arsenic and sent the patient away. She came back in forty-eight hours and when I examined it I found as much sensitiveness in the pulp as when I treated it. I found, however, that the pulp was practically calcified down part way to the apex. My impression is that at the apex it was highly inflamed and sore and whenever the dead part was touched it moved the sensitive part and caused pain. The movement of the calcified portion clinging to the living at the apex caused as sharp a pain there as though you had touched the sensitive part.

As to the discoloration of the tooth Dr. Barnhill spoke of, I know nothing about that. I have had no experience of that kind with this method, but I have had with arsenic.

PRESIDENT'S ADDRESS.*

BY HARRY C. KAHLO, INDIANAPOLIS, IND.

Before beginning my address, if I may presume to apply so dignified a term to a few memorandas which I have prepared for the initial part of our program, I desire to avail myself of the earliest opportunity to extend to you my most sincere thanks for the honor bestowed upon me a year ago, by electing me president of this association. I fully realize my incapacity as a presiding

*Read at the Indiana State Dental Society meeting, Indianapolis, July, 1903.

officer, as well as the absence of that blessed endowment which carries with it the atmosphere of dignity which should surround those in exalted positions. I can only hope for a continuance of your generous and indulgent spirit toward me, through the sessions of this meeting and assure you of my most grateful appreciation in advance.

We are now beginning the forty-fifth Annual Meeting of the Indiana State Dental Association. That our association has reached the age of discretion, is not only evident from the number of years of its existence, but also from the steady, wholesome growth it has had in point fo membership, financial strength and scientific attainment.

In the last named we have been aided by the advancement of scientific researech generally, and the ingenuity of the inventor in particular.

But since the dental association is the practitioners' school we should be willing to accept *some* of the credit for this decided betterment of affairs.

While it is safe to say our association is now larger and better equipped than ever, still when we consider that we are but two hundred of eighteen hundred registered dentists of our State, we must realize that we have an abundant field in which to further recruit our forces. Which leads me to express the belief that our membership could easily be doubled if those who are outside the association could be brought to a better understanding of the advantages to be gained, in the matter of increased knowledge, etc., by the personal influence of the men who compose our membership.

All men who practice dentistry reputably, are open to conviction in this regard, and I believe that a systematic effort brought to bear by each of us upon our neighbors would be very fruitful.

I am rigidly opposed to any modification of our present code of ethics in order to bring about this result, for I believe that by so doing we lower the dignity of our institution. This association has always borne the reputation of being composed of the representative men of our profession and there is no reason why this reputation should not be maintained.

I desire to commend most highly two measures which were adopted at our last meeting. First, the abolishment of dues to

those not in attendance, and, second, the inviting of a guest to each of our meetings.

The former should enable us to retain the full membership which we now have, while the latter should be a most attractive feature toward the growth of our association. Let the good work continue and as our resources increase let us invite two guests, if necessary, that we may the better know what the talented men of our country are doing along the lines of our professional work.

Regarding the work that has been done for this meeting, I desire first to extend my most sincere thanks to our worthy Executive Committeeman for his efficient and unremitting efforts to insure the success of this meeting.

His task has not been an easy one, especially as his aspirations have been of the highest order.

Let me state to those of you who have had no experience of this nature that it is not an easy proposition to successfully arrange the preliminaries of a State dental meeting.

I trust I do not tread too heavily upon your toes when I tell you very frankly, yet honestly, that some of you lack consideration when appealed to, to do your part in your duty to this association. In illustration, let me state that many invitations to prepare papers or to give clinics did not receive the slightest recognition. This I consider nothing short of discourtesy. Members of this association should not lose sight of the fact that it is an honor to appear before this membership as an essayist or a clinician.

Several responses contained the flattering statement that the gentlemen would write papers, if subjects were selected for them. Now, the man who has to have a subject selected for him is either entirely too far ahead or too far behind the rest of us. I will leave you to judge of him.

I don't know that it is customary for the president to make mention of the exhibitors in his address, but I am quite sure this address would be much *less* complete were I to overlook them.

Having had considerable experience with this phase of out meetings during the past few years I have come to a full appreciation of the importance of the exhibitor as a part of our program.

I am not prepared to state that I look upon him as a philan-

thropist insofar as the practitioner is concerned, but I do appreciate that his attendance at dental conventions is largely a philanthropic proposition, and, from the practitioner's point of view, it is decidedly an educational one. Those of you who have not the convenience or a well-equipped supply house at hand appreciate him, I am quite sure. I hope that all of the gentlemen who have come here in the capacity of exhibitors will consider themselves a part of our organization, a sort of exhibitors' auxiliary, and that they will feel free to take part in any of the sessions, social or business in which this association, as a body, is concerned.

I have set down a few suggestions which have been impressed upon me from my observation of the association meetings during a membership of twelve or thirteen years, and I beg to submit them for your consideration. If any of them bear marks of practicability I hope they will be taken up in the discussion which follows and passed upon in a manner which shall meet the approval of a large majority of those present.

First:—*Publication Committee.* I would advise the abolishment of the Committee on Publication. The duty of this committee is to publish the proceedings of the association's meetings. Since we have not had a published report of our meetings for many years, beyond the reports which appear in dental journals, which latter are authorized by the association, and since we are not likely to have proceedings issued by the association I see no reason for the existence of this committee.

Second:—*New Committees.* I would suggest a Committee on New Remedies, to be composed of one or three men, as the association may see fit. An active committee which will investigate and experiment with the new remedies which are appearing on the market from time to time should be able to present annual reports to this association which would be of inestimable value to its members.

Third:—*Executive Committee.* The duties of the Executive Committee are too numerous for one man to handle successfully without the consumption of an unreasonable amount of time. I would therefore suggest that the work be divided. We should either have an Executive Committee composed of three men, each of whom should have circumscribed duties, or preferably, since I am a believed in one-man committees, three separate

committees, of one man each as follows: Committee on Program, Committee on Clinics, and Committee on Exhibits. By this sub-division I think the burden of the work can be satisfactorily distributed.

Fourth:—*Committee Reports.* The reports of the various standing committee, particularly those of Art and Invention, and Science and Literature, should be more of a feature than they have been in the past. These committees have enough matter at their command to rival in interest any essay which is presented at our meetings.

Fifth:—*Place of Meeting.* In view of the disastrous experiences of the past few years in holding meetings outside of Indianapolis, I hope all future meetings, certainly those of the next few years, will be held here. This suggestion does not carry with it the slightest personal or selfish motive, but is based entirely on a study of the records, which show clearly that while meetings held in other sections of the State have been productive of a local increase in membership, that increase was largely transient in its effect.

Sixth:—*Presentation of Cases.* I would suggest the setting apart a certain amount of our convention time, say one session or even a part of a session, for the presentation of cases. By this I do not mean that if a man has a difficult or unyielding case he should produce the patient. The fulfillment of my idea would be, that men who have cases in which they are at a loss to know the best method of proceedure, and men who have had interesting cases which they have treated successfully, should write short histories of these cases and submit them to open discussion at the association meeting. These discussions should be very informal, and I believe would be very profitable.

Seventh.—*Social Session.* I hope that it shall be considered a part of the regular program of all future meetings to have one social session in which all can participate. That fraternity is a large part of the health and growth of our institution few will question. The true spirit of fraternity is more frequently born at our social sessions than at our business sessions.

Eighth:—*Active Discussions.* I earnestly hope that this meeting will see the inauguration of more spirited and active dis-

cussion of papers than has characterized our meetings in the past. I appeal more particularly to the younger and especially our newer members to bring this about. One of the most disappointing features of our latter day meetings has been lack of enthusiasm. After a paper has been read, the men who have been set down on the program to open discussion, arise in their respective order and declare that the Doctor has covered the ground in a thorough and masterly manner, or words to that effect, and with one o two additional remarks, resume their seats. Then follows a lull which is perdiodically interrupted by the chairman suggesting to men that they say something on the subject. Let us remember that this is not an assemblage of orators, but one of practical men who are hustling for knowledge and daily bread. Get up and make yourselves heard if it is only to ask a question or to make a single statement of one sentence. You will observe that such a spirit is very contagious.

Ninth:—*Another Combined Meeting.* I should like to see a movement started at this meeting toward the formation of a permanent organization which will insure us periodical meetings of the magnitude of the ever memorable Tri-State Meetings. It may be argued that they were hard to handle. I grant this as a truth, but contend that their growth was directly attributable to their glowing success. I, for one, am ready to take up a share of the burden, if my services can be used.

In conclusion I desire to assume the responsibility of welcoming our guests from without the State and of expressing to them the association's sincere appreciation of their presence.

We hope you will honor us by taking an active part in all that occurs and that we may be privileged to extend to you an amount of hospitality which will not only cause you to feel repaid for coming to Indianapolis, but will insure for us the pleasure of your present at our future meetings.

ELEMENTS OF SUCCESS IN PRACTICE.*

BY DR. SEXTON, SHELBYVILLE, IND.

It is generally understood that the person most capable of treating, analyzing, or dissecting a subject is he who has gathered most knowledge of that subject from actual experience. If we would know about the north polar regions we give ear to Nansen or Peary; about literary matters, to William Dean Howells; about business or money affairs, to Andrew Carnegie or J. P. Morgan.

Why, then, in view of this fact, should I hope for a hearing on this subject of success in practice? There are dozens of men here more successful than I; then is it not presumption on my part to hold forth on the subject in their presence?

It may be so, but there is one extenuating thought that has come to me—many of the best artists in the world are totally unable to instruct others or even to tell wherein their own success lies. But a good critic can point out both the cause of the artist's success and how some others may achieve like fame; and may even do these things wthout being able to perform one stroke of artistic work himself. The essential beauties in the masterpiece and the ruinous defects in an imitation are evident to him, but to correct them, to do even a work of transient merit is beyond his power. And so the consoling thought has come that I may be able to shed some little light on the subject of success in practice, for I have had my ideas—and deeply-rooted ideas they are—upon the subject for some time. But throughout I wish you to retain the thought that my opinions, my advice, come not from a dweller at the great white, dazzlingly lighted throne, but rather from a philosophical loiterer at the portal who, from the occasional peeps he has obtained of the royal family within the palace, has drawn the conclusions here set down.

To begin then, I shall treat the subject under two great headings, the two great masteries, into which in my mind, it has always separated itself: First, the mastery of manner; second, the mastery of detail.

The mastery of manner is that quality of conduct in our relations to other people that brings to us their confidence and es-

*Read at the Indiana State Dental Society meeting, Indianapolis, July, 1903.

teem. When we go further and try to say exactly in what this conduct consists, we are brought to a sudden halt. There is some subtle, elusive something about all popular men that is hard to locate or describe.

Take one instance; you see a polite man who is well liked by everyone; then politeness is essential. But you soon meet another man who is impolite yet who is as popular as the first. You are puzzled. And so we might go through dozens of mannerisms and be similarly puzzled.

Our mistake would have been made in stopping at these externals, for externals they are and nothing else. For instance, politeness is nothing but a veneer and we all instinctively feel it to be such. When not accompanied by the better qualities of kindliness, forbearance and sympathy it becomes but rank hypocrisy and imposes on no one of intelligence. A little veneer may add beauty and grace to an article at times, but it must not be laid on so thick as to conceal other and better things, for concealment begets suspicion. Many a highly polished article on the market to-day has a rotten interior. We must learn that the public looks at a man as good buyers do at a shirt—when the starch is out.

Therefore, to acquire the mastery of manner we must rely not upon such externals as politeness or suavity but upon those qualities of the heart such as kindliness, sympathy, forbearance, tact, that bespeak the true gentleman.

This matter of tact is a very important possession to one who wishes to succeed, as we all do. In speaking the truth we must learn to speak it with tact and discretion. We must be lovers not of unadulterated truth but of truth adulterated, not enough to cause injury or wrong, but just enough to meet the needs of human frailty. Let us realize that truth cannot always be spoken, nor can love be turned loose to graze at random. There must be a limit to *all* good things.

I do not wish to shock any one with these sentiments of mine, but feel that the properly poised gentleman, the men with the kindly heart, the man with the sympathetic mind, should recognize the fact, for a fact it is, that on some occasions truth must be flavored with the gravy from a lie, else we have an excellent dish spoiled for the want of a good sauce. Unpleasant, sickening truths when properly seasoned loose their nauseating

effect and brighten the world for many about us. This seasoner of the truth is a good friend.

You remember Mark Twain made Puddinhead Wilson say: "When I think of the many disagreeable people who have gone to heaven I am moved to lead a different life." These disagreeable people who have gone to heaven were people who knew not how to season the truth, who had not tact enough to mix in a little gravy when the occasion called for it.

The kindly, cheerful liar is a much more popular individual in this world than the vindictive truth teller, and deservedly so. May the Lord preserve us from the man or the woman who spouts truth and thinks it is his duty to spout truth on all occasions and in all places. To such people should be ascribed much of the disorder and sorrow of the world.

One of the greatest, if not *the* greatest, influence upon all character is habit. It is the master of us all—the one great ruler to whom bow the rich man, the poor man, the beggar man, the thief. Habit is paramount, all controlling, unavoidable. Is it not a blessing then that habit may be good as well as bad? If its whole force were thrown upon the devil's side of the scale we would all be irretrievably damned while still in the cradle. As a kindly providence has seen fit to ordain, it is entirely within ourselves whether we bow to a good habit or a bad one. We may have our choice and one is no more powerful than the other.

And here at the risk of becoming tiresome I want to name some of the good habits every dentist who wishes to succeed should cultivate:

The habits of neatness of person; of neatness of office; of always washing his hands in presence of the patient before operating and washing them well, using the brush on the nails; of always cutting off a new piece of dam for each patient and of doing it in the patient's sight; of cleansing his instruments after each patient, so that when one takes his seat in the chair the bracket table will be clean and empty; of never leaning on or touching in any way a patient's arms, shoulders, or breast, for such an attitude is slovenly and vulgar.

Cultivate these habits, I say, cultivate them well, take pride in them, display them on all occasions, and in addition, cultivate the habit of explaining your work to people, make them appreciate what you are doing for them, and why you are doing it

in that way; educate your patients to understand your work, its aims and its benefits.

And another habit worthy of cultivation is the habit of cheerfulness, for it is one of the best paying cultures in the world. It lightens the great highway of life and throws about us the glow of good-fellowship. We should try to agree with the philosophical old farmer:

> "It ain't no use to grumble and complain,
> It's just as cheap and easy to rejoice;
> When God sorts out the weather and sends rain,
> Why! rain's my choice."

In our offices and in our daily intercourse with people we should learn to be discreet, tactful, kindly, sympathetic and cheerful; learn to be a good listener, a *friendly* listener; learn not to be over-polite, but to be *sincerely* polite, and above all, learn not to be a blow, for nothing is so disgusting to people of culture and intelligence. When a man has learned these things, and only when he has learned these things and applied them as well, can he b said to have the mastery of manner.

And these qualities are all to be won if we will but see it. Those who have them not must not say such attainments for them are impossible, but let them rather acknowledge that they have been too selfish or too fond of pleasure to put up a good fight for their possession.

Many a man starts into practice a poor operator, who in a few years will develop into a good one, but how many by patient self-control and striving raise themselves from the stiffness of a churl to the good-fellowship of one who has the mastery of manner? Very few! Yet the one is as needful to the accomplishment of a successful career as the other and I have no doubt as easily cultivated if we would but see it.

And now we come to the mastery of detail—the technical necessity of success. We all know the strength, the permanence, the artistic beautiy of every bit of work we do is but the sum of the strength, the permanence, the beauty of each detail just as the keystone arch has but the strength of the weakest block used in its construction. If such an arch have but one block of sandstone while all else is granite it is nothing but a sandstone arch after all and will last only so long as the sandstone block lasts, no longer. And so it is in all work—the construction of a great

suspension bridge, the laying of a submarine cable, the filling of a tooth, or the building of a robin's nest among the swaying branches of the trees. Let there be but a faulty strand of wire rope in the bridge, an inch of chaffed cable, the poorly prepared margin of a cavity to be filled, or an unstable fastening of the robin's nest to the limb, and no matter how perfect, how strong, the rest of the work may be, the whole will inevitably fail when the weakest part gives way.

And thus we see that to be successful in our work we must be masters of detail; and to be masters of detail we must show both industry and concentration.

The most universal defect in mankind, a defect seen in all countries and in all climes, among all nations and all races, civilized and savage, is that inertia of the human machine called laziness. Once for all, to be successful, we must overcome this inherent defect in our nature and we must overcome not only physical laziness but we must overcome mental laziness and moral laziness as well. The busiest man is the happiest man. Well has one poet phrased it:

> "The millstone and the human heart
> Are driven ever round;
> If they have nothing else to grind,
> They must themselves be ground."

And poor Richard, the great prophet, philosopher, and sage of our forefathers said: "Dost thou value life? Then do not waste time, for time is the stuff life is made of."

But even after acknowledging the absolute necessity of industry both to happiness and to success in our profession, we have not yet arrived at the very bottom of the investigation.

Around us on all sides we can see men who are hard and seemingly tireless workers, yet who are absolute or comparative failures. There is something then that must accompany all work to ensure success. That essential something is concentration of mind. Without concentration of mind, no matter how industrious we may be, we can never be masters of detail. We may even go so far as to say that concentration is not an accompaniment of successful work, but it *is* successful work itself.

By concentration is meant that uniting of all our powers of intellect and attention upon the performance of one certain act to the exclusion of all else in the world, not permitting the

mind to run out on a dozen other matters. When you read you should think only of the ideas presented by the printed page before you; when you work, apply yourself to the exclusion of every other thought; when you play, play with your whole soul. Do but one thing at a time, but do that one thing hard; allow nothing to distract you. Do not be *desultory* in anything.

A study of this word desultory well exemplifies the thought I would emphasize here. Desultory is from the Latin word *desultor*, one who rides two or more horses leaping continuously from one to another and never for a moment at rest. What a vivid picture that makes for us! How many desultor dentists do you know—dentists who leap capriciously from one specialty to another, never staying with any one subject long enough to master it thoroughly? And these have not even the merit of the old Roman desultor, for he rode *live* horses while they, alas, ride only hobbies.

All failures are caused by a defective detail, by a sandstone block in a granite arch, and defective details, *ninety-nine times in a hundred*, are caused not by ignorance or lack of skill, but by lack of attention.

We knew better than to leave that decomposed tissue in the end of a root under a Richmond crown; we knew better than to leave that weakened corner of enamel over a filling and have it broken later in mastication. It was not want of knowledge that left these sandstone blocks in granite arches, but want of concentration of mind. When we were cleaning out that root or preparing that cavity our thoughts were fixed upon the game of billiards we were going to play that night or on what a good time we were going to have in the coming vacation, or perhaps, we were lost in speculation as to how large a fee the patient would stand without balking.

The difference in men's success depends more upon the early cultivation of this habit of attention than upon any disparity that may exist between their mental endowments. It is not the intellectually brilliant man who succeeds, but the man who is capable of concentration—the great value of all study is not the knowledge gained in that study, but the power, the habit, of concentration that is there formed and become an invaluable attribute.

The man who, when cleaning out a root canal in a tooth, is

so absorbed in his work as to really be unaware for the time being that anything else exists in the world but that root canal, is the one who will do the best. And so in all work we must cut ourselves loose from every other thought.

When Cortez wanted to capture the City of Mexico he made a great sacrifice to secure the concentration of mind of all upon the same object. His soldiers were good soldiers, but they could not help comparing the safety they had aboard ship with the toil and danger that confronted them in the advance. Cortez saw, and like a great captain, he corrected the evil by one fell stroke albeit as painful a one to himself as to any other. One dark night he sent one of his lieutenants to the captains of his ships. The message was: "Set your ships afire and come ashore." The captains obeyed. The men could no longer look backward or think of aught else but the work before them. The distraction was gone. What was the result? One of the most marvellous achievements in the history of the world, an achievement that puts to shame all tales of adventure ever written—a few hundred men captured, conquered, held an empire composed of millions of people.

And so when we have something to do must we act. We have no ships to burn, but we have disturbing thoughts to cast out of our minds, foolish fancyings and imaginings to control, and these very often require as much strength of character in us as was required of Cortez at the great crisis of his expedition.

In every operation we must apply the logic that was used in the building of the famous old "one-hoss shay." You remember the deacon had observed that every chaise in his knowledge had failed for the reason that one part was left weaker than the rest. It was but logical for him to conclude that if one could but be built wherein all parts were equally strong then the chaise would never wear out.

So the deacon set to work on the wonderful "one-hoss shay", selecting only the very best material that could be found and concentrating all his energies upon each detail one after another in its construction.

> "'Fur,' said the deacon, ''tis mighty plain
> That the weakes' place must stand the strain,
> 'N the way to fix it, uz I maintain,
> Is only jest
> T' make that place uz strong uz the rest,'

"The deacon's art
Made it so like in every part
That there wasn't a chance for one to start,
For the wheels were just as strong as the thills,
And the floor was just as strong as the sills;
And the panels just as strong as the floor,
And the whippletree neither less nor more;
And the back crossbar as strong as the fore,
And spring and axle and hub encore."

The deacon died, but his work lived on. Decade after decade and generation after generation was the old "shay" seen nobly standing up to its work until a century was gone by. But then, alas, the end came. Though one part could not outwear another, for all parts were equally strong, yet they could all fail together.

"What do you think the parson found
When he got up and stared around?
The poor old chaise in a heap or mound
As if it had been to the mill and ground!
You see, of course, if you're not a dunce,
How it went to pieces all at once,—
All at once and nothing first,—
Just as bubbles do when they burst.

"End of the wonderful one-hoss shay.
Logic is logic. That's all I say."

This old poem exemplifies well, albeit in a humorous light, the value of the mastery of detail, the value of concentration of mind. And so like the good deacon must we labor if we would have our work stand for one hundred years. Then, first craving your pardon for a vile crime—the crime of murder—murder of a masterpiece—I will for our own needs parody thus:

And the dentist's art
Made the fillings so perfect in every part
That there wasn't a chance for one to start.
The cavity first made white and clean,
With proper grooves, you know what I mean,
And the wall was just as strong as the groove,
So strong that the filling once in couldn't move.
And the wall couldn't break for it was as strong
As the opposing tooth, so naught could go wrong.
Then the gold was packed each piece like a wedge,
As firm as if welded by blacksmith's sledge.
The whole built solid, clear up to the crown,

Heeding neither time nor patient's frown.
When properly polished and finished, I ween,
No better filling there ever was seen.
And that's the way to defeat decay.
Logic is logic. That's all I say.

DISCUSSION.

Dr. H. S. Stevenson.—If sound business methods are the secret of success in the mercantile world, why not in the professional world? If bad business methods probably cause the great proportion of the appalling ninety-five per cent. of failures that occur in the mercantile world each year, what sort of a picture may we make of the business side of dentistry. While the per cent, of failures in our profession is not as high as ninety-five, I firmly believe it is higher than in any other profession, and this, to a great extent, is owing to ignorance of and carelessness in business methods. The heads of our dental depots could give us some interesting information along this line, and perhaps a complete record of the success and failures in our ranks from their ponit of view.

When I behold the motley array of gold crowns on our streets I wonder where conscience dwells of late. Many operators evidently have arrived at the same conclusion as the second speaker in a colloquy in "The Merchant of Venice." The first speaker says:

"So when he opens his purse to give us our reward, thy conscience flies out."

Second Speaker: "Let it go; there's few or none will entertain it."

First Speaker: "How if it comes to thee again?"

Second Speaker: "I'll not meddle with it. It is a dangerous thing; it makes a man a coward. A man cannot steal but it acuseth him; he cannot swear but it checks him. 'Tis a blushing, shame-faced spirit that mutinies in a man's bosom. It fills one full of obstacles; it made me once restore a piece of gold I found; it beggars any man that keeps it; it is turned out of all towns and cities for a dangerous thing."

And this is as true in this day as in the time of Shakespeare. If conscience is turned out of all towns and cities for a dangerous thing, would that more dentists could, or rather would, feel as the first speaker in this dialogue, when they contemplate telescoping a good tooth or bridging doubtful ones, say to themselves: "Zounds! it (conscience) is even now at my elbow!" If this view is not taken by the profession, and that soon, a reaction will come with such force that all will suffer and the profession will be looked upon with suspicion.

On the other hand, to allow the patient to take the advantage shows a weakness or looseness on the part of the dentist which will interfere greatly with success. It has been necessary for me more than once to add to a statement, "Please call and settle at once and save costs." Clients who take exception to such an injunction are not worth having, and those

who do not will pay and return to you. There is no better way of underestimating one's self than to allow patients to leave your office with no understanding as to the fee, and not following this by an early statement.

It would be most interesting to follow one thousand dental students through their careers. A distinguished English surgeon, the late Sir James Paget, made the following datum of his students: Sixty per cent achieved success, varying from "distinguished," "considerable," to "fair;" eighteen per cent a very limited success or entire failure, and 22 per cent either died or left the profession.

He attributed the sixty per cent of successes to personal character, nature and will of each student. The same qualities should insure as high percentage of success in our own profession, but as high a per cent does not exist, and one of the reasons for this is the poor health in our ranks. Indomitable perseverance or necessity may keep the dentist at his post year in and year out, but success can come in only a limited degree if he has poor health. William Pitt astonished people with his learning at the age of seven, and in spite of ill-health became Prime Minister of England at twenty-four; but I would consider him as an anamoly. We do not hear of many anamolies in dentistry, for the weak, anemic body, bent in form, cannot carry with it the all-desirable magnetic force. The nervous touch is immediately detected by the patient, and if this nervousness is accompanied by an irritable temper—which is pretty apt to be the case—patient and dentist become repellant, confidence is shattered, the patient leaves, and he and his good influence are lost to that dentist forever. It does not pay to sacrifice good health for a reputation. Better sacrifice time and money first, then with a proper measure of strength seek success and court renown.

On a par with the baneful results of ill-health are greasy, stained and frayed clothing. They are pretty plain indications of the stuff inside the man; at any rate they don't pay.

We may go on thus indefinitely naming positive and negative elements that govern success; but there is one word that to me carries a broader meaning with it than any other, and around it clusters all the beatitudes peculiarly desirable for the dentist—cleanliness. Given cleanliness of body, clean hands with clean nails, a clean, clear brain and a clean, pure, honest heart, and all else must be subservient. The eye may be untrained, the hand awkward, but as an outgrowth of cleanliness the most delicate technic may be acquired. Why? Because it will beget industry, industry will be followed by studiousness, studiousness by investigation. All things must and will work in harmony with cleanliness, and the clean man will be lord and master of manners and detail, no matter what may be in the way.

Doctor Kirk.—The details in our practice should be carried out with the utmost care. If the minute details are carried out properly we will meet with immediate success. A few years ago I was sitting in my parlor and there was present probably a half dozen young ladies. I was reading and they were discussing their future. They had just graduated from the high school in our city, and they were asking, "What shall we do?" "Where shall we go?" "What specialty shall we adopt?" "What course of

instruction shall we take, and where shall we take it?" After discussing it, as only girls know how to discuss these questions, they appealed to me and wanted to know what I thought would be the best step for them to take. I said, "Girls, I will tell you the very best thing you can do." "What it is?" they asked. I said, "Go right back to school and take a year's course in the eighth grade." They had passed beyond that by four years. As a matter of course they all rebelled. As these young ladies have gone on I have kept track of them. Some of them graduated from the best schools in the east; some of them have married; my own daughter was one of them, and she graduated from a school of music in St. Louis. I have watched them all carefully, because I was very much interested in them, and I am positive I gave them the very best advice possible, and that they would be very much better prepared to meet life if they had followed my advice.

Now, gentlemen, we in our profession, are largely in the same position. Just as the essayist told you when he spoke of the many failures, a large proportion of them are caused by a failure to understand the fundamental principles of our profession, as we should have learned them away back in the eighth grade. In any college course you may take in any college in our land there is not a scientific proposition brought up that is not based upon something which should have been learned in the eighth grade, and the student who has failed in any branch included in that grade will find that he will fail later on in other branches because of it. He cannot succeed unless he goes back and learn that which he neglected to learn in the eighth grade.

When we come to the statistics of the young men who pass through our professional schools, schools of dentistry, medicine and others, we find the percentage of those who go on to anything like success very small. That lack of success is just in the lack the essayist speaks of in his paper, the lack of detail in the work as it is taken up.

A traveling man came to my office some time ago, and he told me he had had a tooth treated. He said the dentist had removed all the pulp and the pus from the swelling. He had had it treated five times since, first in one place and then in another. When I took out the dressing to make an examination, he said, "Oh, don't touch that tender point; that is what they are doctoring." I thought if that was what they were doctoring it was something they should not doctor. I managed to get out a little pulp, and that is what they had been doctoring for five or six weeks. Just simply for lack of minute detail in diagnosing that case they had caused all this trouble. If we in our manipulation will take proper care of the details of our work we will not have the failures so many of us now have. A year ago at Maxinkuckee a gentleman read a paper upon some way of filling teeth. He made the statement that the average life of a gold filling was three years. I took exception to the statement at that time. I think I spoke to Doctor Hunt, who was sitting by me, and he said, "Yes, that statement is true," Now, gentlemen, that ought not to be true. I will tell you what it is. If Doctor Hunt's father, or Doctor Moore, of Lafayette, or Doctor Knapp, of Ft. Wayne, could have turned over in their graves when

that paper was read, they would have done it. Gold fillings should not give out in three. Their fillings did not give out in three years, and I could name a great many other men who are alive whose fillings have not given out in three years. I shall not mention their names, however, because it might puff them up with pride; but I know their fillings last a great deal longer than that. Now, gentlemen, it is a lack of knowledge which should have come to us in the eighth grade that makes the average dentist's gold fillings give out in three years, if they do give out in that time. If they do give out, gentlemen, I will tell you it must be the fault of the teaching in our colleges. If our colleges are not teaching men to do better work than that, they ought to put every last mother's son of them back in the eighth grade and teach them the principles and the details of dentistry before they let them go out and practice. However, I don't believe that statement is true, but if it is I know it must be because they are not using proper care, not paying attention enough to the details and the principles that were learned at the very beginning of their professional life. I say again, gold fillings ought not to give out in three years. Why, we ought not even to acknowledge such a thing as that. I know one thing about it, I know we go on to what we call the higher things, bridge-work, crown-work, and one thing and another, but it is not the primary work of a dentist to put in bridges and crowns. With a properly educated dentist the teeth need never come to the need of a crown or a bridge or a set of false teeth unless in old age. We should educate our little patients as they come to our hands, and they will not need to come to crowns and bridge-work until they reach old age. It is carelessness, largely, that we come to such things as that. We should look after the work in the early life of our young patients. Take them as children and train them, and also train their parents, and we will have a much better class of work done than we have to-day.

I know I may be treading on somebody's toes, but I cannot help it. I tell you I am thoroughly convinced that we are not doing enough in the way of educating the children and educating the parents for the children in the care of the teeth.

Doctor Hunt.—It was Doctor Smith, of Indianapolis, I think, who read that paper Doctor Kirk referred to. If I ever agreed with any one that the average gold filling only lasts three years. I don't remember it. Doctor Kirk said I sat beside him and said that. If I said that I want to say now that it is true only of the fillings of some people. I believe that the average gold filling of some people will only last three years.

Doctor Kirk said something in regard to the average college graduate's ability to put in a gold filling. As I look over this body this afternoon I am sure that nine-tenths of those present are college graduates, and I believe further that eight-tenths of them I have had the pleasure of lecturing to, and if they could not put in gold fillings they would not be here to-day.

DENTAL ART AND INVENTION.*

BY A. T. WHITE, D. D. S., NEWCASTLE, IND.

That the world is moving with us, is evinced by the great number of new and useful inventions of interest to the dental profession.

The Eagle Dental Manufacturing Co., of Philadelphia, successors to Wm. M. Speakman, contribute a water syringe, a great improvement over the Moffat, in that the point can be instantly removed and the syringe filled in five seconds.

They make the Fritz hand-piece, which is a universal instrument with a slide on the outside for controlling the bur. Their hard-rubber handled instruments, having the metal running through the entire length, are good ones. They also show the Philadelphia separator, a universal instrument with a wide range of usefulness. The Impey crown slitters, to be placed on an ordinary root forcep, appeal to one as being a useful and almost necessary device.

Dr. H. S. Cruttenden, inventor of the cement syringe, has an improvement. He says: "I have an improvement in my cement syringe that is new this year, the improvement is that the instrument is so made that in case the party using it should get careless and forget to extract the piston before the cement sets, it can be done by any one himself, in place of sending them to me, as many have done, to have the piston removed, the directions will tell how it is done." He also has a collapsable gelatin tube, which is to be used and then thrown away, which bids fair to be a winner.

Dr. J. J. Brown, of Macon, Mo., contributes an improvement on the "S" elevator, in the way of a guard, which drops in between lip and alveolar process, and protects the lip in the pull motion.

Dr. R. B. Tuller, of Chicago, presents a new and useful instrument for applying pressure anesthesia, consisting of a double-ended instrument with rubber cups for confining the cocaine, enabling the operator to obtain the best results from the medicine.

Morrison Bros.' Dental Depot, of Nashville, Tenn., are sole agents of Dr. W. T. Martin's intra-alveolar forceps, which are

*Read before the Indiana State Dental Society, July, 1903.

models of strength and utility. Their beaks are so formed as to easily slip between process and root, while their shape is such that the two pairs, upper and lower, enable the operator to extract, with ease, any root.

The Smith-Watson Co., of Philadelphia, have a new electric mirror which is very good. The light is immediately behind the mirror, shining through a small hole in the center. They furnish it either with dry battery or connection with electric light system.

They also make a water heater, which can be attached to light plug and inserted into a glass of water, heating it readily to the desired temperature.

A mandrel with rubber polishing heads, ready mounted, are also among their new articles.

Drs. Hare & Stephens, of Danville, Ill., are the manufacturers of a set of mouth props which greatly facilitate operations in the mouth where dryness is essential. Their ease of adaptation makes it likely that they will supplant the rubber dams in many instances.

Dr. Geo. W. Todd, of Omaha, Neb., has a set of rubber dam holders, the points in favor of which are that a small piece of dam may be adjusted in the mouth, over one or two teeth, without the necessity of covering the entire mouth.

Dr. H. M. Stempfel, of Madison, Ia., is the inventor of a new dental plaster, in the form of a medicated rubber suction cup, which is a splendid medium for the application of any medicine to the gums.

Doctor Leonard, of St. Cloud, Minn., has a matrix retainer, applied with a regular rubber dam clamp forcep, which is deserving of careful consideration.

J. W. Ivory has a porte polisher holder, a set of vulcanite scrapers and a double rubber dam clamp, which are all splendid new things, fully up to the high standard set by him in all his appliances. He also manufactures a cleaver guide, the invention of Doctor Roach, of Wedgelock tooth fame, which will prove quite an aid in preparing roots for crowns.

Doctor Roach's Wedgelock tooth will prove a boon to crown and bridge-workers, in that it is a facing which can be removed in soldering, and replaced when broken, without the necessity of removing the bridge or crown.

Dr. I. H. Alexander, of Camden, S. C., is the originator of a new sectional tooth crown, the band being made in two parts and joined together with rivets to permit of movement in adjusting over crown of tooth and fitting snugly at gingiva. He thus describes them:

"1. A dental crown, composed of a pivoted sectional adjustable band, in combination with plastic material, forming the biting-surface and adapted to be received and retained by the same.

"2. In a dental crown, the combination with a sectional band connected by a single bolt passing through the plastic material, which is adapted to be received within and retained by the band.

"3. A dental crown, composed of a pivoted sectional adjustable band, in combination with plastic material adapted to be received and retained by the same, and a cap with its projection adapted to be received and retained by the plastic material upon the crown."

The Buffalo Dental Mfg. Co., have a new automatic plugger with hard rubber grip, which is a model in construction and action.

Their new flask press is neat, convenient and sufficiently strong for all purposes. It has a flask holder and lifter which drops out of the way when placed in press.

Their rubber gauge, consisting of a glass tumbler and perforated lid, is neat and practical.

They also present two or three neat flasks for vulcanite and celluloid.

Their partial flask, the lower half made higher in front, is quite an improvement.

Dr. Wm. Crenshaw, of Atlanta, Ga., exhibited a new matrix device which is very complete and practical, especially for gold, or gold and tin work.

Wm. Waegel, of Philadelphia, manufacturers an improved anchor flask, which has a round nut which fits into a corresponding recess in lid, making it impossible for it to slip off when being screwed down. His new handy articulator is made without a pin.

The Oakland Chemical Co has a new glass syringe with

asbestos packed piston and gold or platinum needle, which is certainly a fine instrument for using medicines which corrode other syringes.

The S. S White Dental Mfg. Co. have given us aura-percha, a valuable cement for fastening the first pellet of gold, doing away with retaining points and grooves.

They have also perfected the Hammond electric furnace until there is probably not a more perfect machine in use to-day.

The Dental Protective Supply Co. has remodeled its handpiece until it is much better than ever before. Their heavy pliers for removing loose roots or spicula of bone, is a very convenient and useful instrument

The Kerr Dental Mfg. Co., of Detroit, Mich., have a new crown and bridge articulator which is built on the same lines as their anatomical articulator, and is all right.

They also have a new cavity lining which, after careful investigation, is pronounced a decided success.

They also manufacture a new cleansing paste for the hands, which is very satisfactory.

A. C. Clarke & Co. have a gasoline heater for vulcanizers which is very convenient. It consists of a reservoir with pump attached and a sectional hinged tube with burner on the end which can be let down under vulcanizer or folded back under a vessel on top of reservoir for heating water.

The Turner Brass Works have a powerful gasoline blowpipe with porcelain furnace. Also a water heater and Bunsen light with many scopes.

They are working on a wood alcohol blowpipe which produces an intensely hot needle-pointed flame, with which small pieces of platinum may be melted and fifty per cent. platinum solder flowed readily.

Dr. J. Q. Byram, of Indianapolis, presents a swaging device for swaging cusps for crowns, backings to facings, clasps for partial dentures, and matrices for inlays. It can be used to swage a button of gold to any required thickness.

THE EVOLUTION OF THE MOLAR.*

BY H. M. THOMPSON, D. D. S., INDIANAPOLIS, IND.

The story of evolution is the most fascinating romance of science; it is a love story, a tragedy and a romance all in one. It is a story that is being written in many languages. "Struggle for Life" is the villain of the play, and "Mother Love" the heroine. The teeth have played no inconsiderable part in the development of the plot, for they, being the most indestructible parts of the body, are frequently all that is found of the fossil remains of extinct animals, and many of the extinct animals have been named from some peculiarity of form, number of or arrangement of the teeth. Though the completed story of evolution may not be furnished for a thousand years, enough facts have been established that it has been accepted as the method of creation by the majority of biologists, paleontologists and other scientific men. If the fact has not been demonstrated it has at least been accepted as a working hypothesis. Huxley says: "Evolution or development is at present employed in biology as a general name for the history of the steps by which any living being has acquired the morphological and physiological characters which distinguish it."

The cone is the primitive form of tooth and all teeth have been evolved from it, by modifications of and additions to the primitive cone.

Among invertebrates teeth are the exception and not the rule. Among vertebrates teeth are the rule.

Fishes are the lowest form of vertebrates and the teeth are the same degenerate tissue as the rest of the body; the bones being soft and the teeth composed of vascular dentin, with only an occasional tip of enamel. There is no general rule as to number or location, the number varies from one in the myxine to hundreds in the pike and salmon, or there may be none at all; they are found in every conceivable position about the bones of the head. In all species the teeth are replaced when lost, throughout the life of the individual. There are several forms of teeth found among the fishes, but no true masticating teeth, the teeth being used for prehensile purposes only, the nearest approach to the molar is in

*Read before the Indiana State Dental Society, July, 1903.

the rays, where the teeth have been modified to a pavement-like form used in crushing shell fish, upon which they largely feed.

The second class of vertebrates is the reptiles. They are a degenerate lot and it is difficult to believe that they once dominated the animal world much as the mammals do now. The reptiles are subdivided into amphibia and true reptiles. When teeth are found in the amphibia they are usually conical in form but not so numerous as in the fishes, but renewed when lost. Among the true reptiles the teeth are usually implanted in separate sockets though they never have more than one root. The lizards and snakes often have them ankylosed to the jaw. Among the snakes the bones of the head are united by elastic ligaments. By this arrangement they are able to swallow an object two or three times larger in diameter than themselves by working and protruding the jaws alternately, the sharp recurved teeth holding the prey while it is being forced slowly down the esophagus. The teeth of snakes are conical in form, very sharp and are, as in the fishes, used for prehensile purposes only. Other reptiles are the alligator, crockodile, lizard, toad, etc. The teeth of the same individual differ more in size than in form, departing with but few exceptions from the modification of the simple cone.

The fourth class of vertebrates is the birds. None of the living species have teeth but are provided with a bill or beak that is of such form as is best suited to the feeding habits of the owner. When mastication is needed it is performed by a gizzard, a muscular stomach. It is a remarkable fact that while none of the living species of birds have teeth, dental pulps are sometimes found in the jaws of the embryos of a species of parrot. An inheritance probably of a toothed ancestor.

The highest class of vertebrates is the mammals and they are the most complicated in structure of the organic world. As this is the class to which we belong, it is the class in which we are most interested. Mammals vary in size from the smallest sized mouse, to the largest whale. They have teeth of all sizes specialized for all sorts of purposes. The number of teeth is usually definite; each tooth is implanted in a bony socket. They never have more than two sets of teeth and sometimes only one. In some the teeth are of continuous growth.

The class of mammals is so large, their environments are so different and the variety and forms of the teeth so numerous, we

will have no time to even mention them. Any good work on zoology will furnish interesting reading for those of you who are interested. The teeth of mammals are specialized for cutting, tearing, crushing and grinding. Professor Cope has enumerated the following five causes as the origin of dental modifications:

1. "Increase of size of a tooth or part of a tooth is due to increased use within a certain maximum capacity for increased nutrition.

2. "The change of direction and use of a tooth takes place away from the direction of greatest, and in the direction of least resistance.

3. "It follows from their greater flexibility, that creses of crowns yield to strain more readily than their cusps.

4. "The increase in crests and cusps in all directions, and therefore the plications of the same, is directly as the irritation from use to which their apices and edges are subjected, to the limit set by destructive effect of such use or by the recuperative energy of nutrition.

5. "The direction of growth of the horns of a V or the horns of a crescent will be in the direction of movement of the corresponding part of the opposite jaw."

Professor Cope says: "The distinction of teeth into incisors, canines and molars appears independently at various points in the lives of vertebrates." What I am now presenting is largely made up of extracts from the writings of Professor Cope.

The incisors are simple cones flattened and modified for cutting purposes. They are well developed in man and almost rudimentary in the carnivora. The most remarkable incisor in any living mammal is the elephant's tusk. It is used as a very effective fighting weapon and as a tool for digging.

The canine is the most primitive tooth among mammals. It has more nearly the form of the primitive cone. It is absent in some of the mammals and reaches its highest development in the carnivora. In man it is but little longer than the incisors and molars.

The bicuspids are formed by the fusion of two cones, which are distinct throughout the entire length of the fang. To the intercone, called the protocone in the upper jaw, and the pro-

toconid in the lower was added an inner cusp the deutrocone or the deutroconid.

The names for dental cusps are compound of conus, a cone and prefix designating their relative position or relative order of appearance. Protos, the first; deutros, the second; tritos, the third; tetaros, the fourth; para, beside or alongside; meta, behind or after; hypo, under; entos, within to the inner side. The suffix "id" denotes a cusp on a lower tooth

Long continued and severe pressure on a single cone would cause it to expand laterally or in the direction of least resistance and little or not at all in the direction of greatest resistance. The molar teeth have been subjected to a much greater strain than any of the other teeth and this with the addition of other cones would account for their increased diameters. In the development of the molar, to the primitive cusp is first added an anterior cusp called the paracone, then a smaller posterior cusp called the metacone. This gives three cusps in a line and is the tricondent form of molars, being still preserved in some species, as the seals and others. The secondary cusps of the tricondent molars, the paracone and metacone, the paraconid and metaconid serve to fill up the space between the alternating cusps of the protocone and protoconid, thus in closing the jaws a certain amount of interference results, as the newer and smaller cusps would be less resistant to pressure than the larger primitive cusp, they would change places rather than the other. The teeth of the lower jaw closing within the upper jaw compact would force the cusplets of the upper teeth outward the major cusps still retaining their original position. The cusplets of the lower teeth, the para and metaconid, would be forced inward. With increase in size of the teeth the cusps would soon assume a position more or less transverse to that of the other jaw. Thus was formed the triangular form of molar called the tritubercular and is still present in the opposum.

In the typical tritubercular dentition the crown of one jaw alternates with those of the other. In the second stage of molar development is added at first a low ciugulum on the posterior base of the lower molar, this gradually developes into a broad heel, supporting one, two or three cusps, the buccal of which is called the hypoconid, the distal, the hypoconulid and the disto-lingual the entoconid. The hypoconulid strike into the valley of the

tribucular molar above, thus each lower molar strikes two upper molars or strikes on one and shears on another. Then to the upper molar on the distal lingual side is added a talon which supports a fourth tubercle, the hypocone, thus making it a quodrutubercular molar and completing the dentition as it is found in man, which compared with some of the complicated molars of some of the mammals is quite primitive in type.

The typical mammalion dentition is forty-four teeth. As man has only thirty-two he has evidently lost twelve and he seems elected to loose eight more. We all know of families where the upper lateral incisor is absent in all or several members of the family. It is a little more difficult to say when the third molar is absent owing to its being so erratic in the time of its eruption; very frequently it is reduced to a peg-like form, and the roots are usually united, while in the lower races they are separate. Even the human race itself may be doomed to extinction through some degenerations due to artificial way of living or indulging too liberally in the so-called luxuries of life. Already there has been quite an outcry raised in France because the birth rate is less than the death rate. Nature works slowly, she measures time by centuries, not hours. Had man been contemporaneous with the mammoth, as indeed he was in Europe, he would not have known the mammoth were becoming extinct unless he had annihilated them himself, as the hunters on the western plains did the American bison within the memory of men now living. It does not seem impossible that sterility of women may spell the doom of the human race.

In the writing of this paper I am indebted to Jay, Cope, Drummond, Thompson and Lucas for information found in their published works.

DISCUSSION.

Doctor Hessler.—I would like to say that Doctor Thompson's paper is one of the most scientific that has been presented here. It not only touches upon evolution, but also upon comparative anatomy. Comparative anatomy is one of the most interesting subjects that any one ever undertook to study.

I sometimes ask, "What part are we playing in the works of evolution?" We sometimes come across patients who say, "Why, Doctor So-and-So says whenever the third molar or wisdom tooth begins to decay, take it out." So we go on extracting these teeth from the mothers and

fathers to be. Now, if there is anything in heredity, and we extract enough molars from fathers and mothers to be, cannot we so influence the future generations as to reduce the number of teeth, as has been done in the past? We are told that the primeval man had forty-four teeth, but evolution and disuse, and other things, have contributed to their loss. We know of the loss of the use of many of the muscles we have in our physical bodies. It has been the subject of many interesting discussions, and I have often wondered what the mouths of the generations of the next two hundred years will be like.

Doctor Thompson.—If you were to saw off all the legs of all the ancestors of all the children that are to be born until the crack of doom, the last child will be born with two legs. But if you train people to walk on one leg, and not on two, perhaps the last child will be born with one leg. The loss of the things mentioned come from disuse. My idea was that if the teeth are degenerating, and we are dealing with tissue that is degenerating, we are up against a very tough proposition, and for that reason I think our work does not stand up well. The Bushmen of Australia are the lowest form of man now living; they are nearer the ape than any other men. The third molar in their jaws is larger than the first molar; the second molar is also larger than the first. It frequently happens that you find in them four more molars than you find in the civilized races The cuspid is more pronounced. In monkeys the laterals and centrals are of equal width. In the oorang, which is nearest man in physical development, the lateral incisor is smaller than the central. In some of the fossil men that have been found in Europe the same peculiarity of the third molar and the second molar being larger than the first is found. You will find that among the negroes their molars are nearly all of the same size, and that the roots of the molars are separate—that is, in the full blooded negroes.

SOCIETY PROCEEDINGS

INDIANA STATE DENTAL SOCIETY.

DISCUSSION ON DR. HENSHAW'S PAPER, "THE ARTICULATION OF FULL ARTIFICIAL DENTURES."*

DR. J. H. MORRISON:—The main intention of the paper, I take it, is correct: that is, there is not on the market to-day a tooth that meets the anatomic articulation. There are reasons for this: The dealers in dental goods are simply furnishing the goods that are demanded. I think, if the truth were known, it would be found that the greatest demand for articulated teeth comes from that part of the profession that does not study the artistic to any extent.

There is also another reason for it: The makers of artificial teeth are making very fair progress after all. Since I read Doctor Henshaw's paper I have examined some advertising pamphlets that were printed ten or twelve years ago, and some of the artificial teeth pictured in those pamphlets made me wonder whether they were meant for human beings or for beasts. Now we have teeth that sufficiently meet the requirements of our work, except in that one point of which Doctor Henshaw has spoken.

IMPORTANCE OF CORRECT OCCLUSION.

To my mind there is nothing more important to the dentist than this one thing of occlusion, not only on artificial teeth, but in every other operation the dentist performs. I suspect the imperfect articulation is the secret of a whole lot of trouble. In placing the Logan crown, if the patient can close all of the teeth together and slide the lower jaw out without touching the upper teeth the crown will stand for a long time; but if the lower teeth strike upon the inside of the upper teeth it will injure that crown sooner or later.

Doctor Henshaw is pleading for a display of high art in artificial teeth. There are a whole lot of other things that must be cleared out of the way before everybody will demand art in artificial teeth, As I stepped on the train this morning I met a man who had occasion recently to furnish his house. He had all the money he needed, and he determined the house should be furnished artistically. He sent for Mr. Badger, of this city,

*This paper was published in February SUMMARY, page 107.

and when Mr. Badger told him a thing was right he said that was the thing he would have. He sent to New York for a man to tell him what kind of rugs to put on his floors. But when that man opened his mouth to speak to me not less than twelve gold crowns glittered in the morning sun. So long as those things occur I don't think we can say much about high art in artificial teeth.

The fact is the profession has just about got down to the utilitarian idea that one good natural tooth is worth a whole mouthful of artificial teeth, and it isn't anything of the kind. Should that one natural tooth be saved at every expense? I say, No! upon the same principle that a cast-iron head would be better than a head of flesh and blood. I believe the beauty of the human countenance is just as important as any utilitarian idea can be I wish the profession would demand a little art in its ranks; I wish the rank and file of dentists were willing to sacrifice themselves a little more. It will only be for a short while. After a while the dentist that disfigures the human face or allows his art in the mouth to be seen will be considered away behind the times. Some of the younger men here will see that day, and you might as well get ready for it. America has given her true expression to art in other lines. Let us try to give it expression in our profession. We cannot all be artists, but we can reach a higher place than we occupy to-day.

There should be a kind of adjustment between the length of the cusp and the curvature. I find myself always obliged, in securing the balancing action by adjustment of the last two molars, to give the second one a little tip so that the first superior will have to slide up hill a little more to accommodate the overbite.

Doctor Ryam:—I believe a great many sets of artificial teeth are unsuccessful in establishing a line of occlusion different from what the natural occlusion was in that particular line. The line falls higher or lower, or the chin and nose are not kept the proper distance apart. I mention this only as a point for consideration.

Doctor Haas:—I want to endorse what Doctor Henshaw has said about the grinding of teeth. I don't believe it is possible for a manufacturer to make teeth that are suitable for all cases. There is a certain amount of grinding we have to do. I used to take issue with my father when I came out of college about doing so much grinding; but I soon grew out of that and agreed with him about it.

Dr Byram:—As I understand it, the parabolic curve is a section of a cone. A parabola is a section cut at right angles with the base. The parabola or arch is a circle formed by the six anterior teeth, with the bicuspids and molars running back on either side. The compensating arch, as Doctor Henshaw calls it, is the curve which is in relation to the length of the bite and the length of the cusps.

Now we have one thing to take into consideration in the arrangement of artificial teeth, if they are to be arranged in what we might call an ideal way. In the first place, the patient may have lost the teeth a num-

ber of years before. As soon as one or more teeth have been extracted there is a change in the angle of the ramus that changes the whole conditions. The longer the teeth are out the nearer we have the angle coming back to the obtuse angle. In such a case the arrangement of the teeth must differ from the arrangement where the teeth have been only recently extracted. We must always take this into consideration in the arrangement of artificial teeth. I believe many of us have trouble in the articulation of teeth on account of the way we arrange the incisors and the cuspids. Now with an arrangement such as you see here, with the neck of this tooth thrown toward the ridge, every time the patient attempts to incise you will have a tilting of the plate. When the patient throws the incisors forward we have the three points of occlusion. We want to keep an arrangement so that when we are masticating, the force is in such a direction it will not have a tendency to tilt the molars. The necks of the teeth should be thrown outward. When the incisal edge is thrown out the ridge acts as a fulcrum. The result is we have a throwing out of the incisors. The force is thus directed toward the center of the palate. That in many cases will correct the trouble of a plate not giving satisfaction in mastication. I read a paper last summer on the selection of artificial teeth. I recommend the manufacturers to place the teeth in sets of sixes and eights instead of sets of fourteents. Personally I prefer going to the dental depots and selecting from the odd stock what I want. Those of you who have never tried the "natural form" teeth made by S. S. White may not know that he has a molar with more of a natural occlusal surface. The great trouble with the molars is that the bucco-lingual diameter is too small. With this new form they have overcome this with a larger stem. I think in an ideal arrangement we ought to get the three points of contact.

Doctor McCurdy:—We have a manufacturer of artificial teeth with us. I should like to hear from Mr. Brewster.

Mr Brewster:—There is is point Doctor Byram has mentioned which is an exceedingly good one, and that is the selection of the anterior teeth distinct from the posterior teeth. That is a method that is adopted in Europe almost exclusively. It is only recently they have taken to purchasing sets of teeth as put up by the manufacturer. I think if you will examine the sets of teeth put up by any manufacturer in rubber sets of teeth you will find in a great many of them the molars and cuspids are not in the proper relation to the anterior molars and cuspids. I don't know how many of you have observed that little defect. If you purchase a set of twenty-eight teeth they will appear to be all right. I asked a gentleman one day how he would proceed to select a set of fourteen teeth, upper teeth, to occlude correctly with the lower teeth, supposing the lower teeth were all in position, and make them agree with the lower teeth, if he only had a set of eight anterior teeth to go by? I don't know how often you have thought of that subject, but I have noticed so many cases in the best makes of teeth in which the molars and cuspids are out of relation, that I was led to ask the question above.

I don't know how old the idea is, but apart altogether from the sulci and the one cusp in relation to the other, that Dr. Henshaw has referred to, and as to the condition of the jaw as you will find it at the time, whether this perfect occlusion is possible at all, there is a relation the upper teeth should bear to the lower. The width of the three anterior teeth, say the central, lateral and cuspid, should agree with the width of the two bicuspids and the first molar. Now if you select a set of twenty-eight teeth and compare them you will find that you can spend hours in trying to make that set articulate without success; but if you will get the relation I speak of you will find it easy to make the occlusion.

Doctor Byram:—I think the bicuspids and molars would be a little wider than the others.

Mr Brewster:—I know from having to make moulds that that is about right. I thought the idea was worth speaking of here. No manufacturer can make sets of teeth to meet everyone's views, but he should make them anatomically correct. Some years ago I made molars and bicuspids that were pronounced too large, and I had to change all my moulds to conform to the demands of the profession. Therefore, you see it rests with the profession to say what they need.

Doctor Henshaw:—We must spend hours of hard work in getting the teeth into usable forms. I have personally found that the best shapes for practical use are those made in the counter-sunk moulds. Where that sort of tooth is applicable I have found it makes the most satisfactory and natural piece of work.

I am sorry Doctor Byram didn't criticise the paper more, because I wanted to tell a story on him. I have a young man in my office who has had one year in dental college. The other day when I was getting a case ready I showed it to him. The young fellow stutters slightly, and after looking at it a minute and sizing up the articulation he said: "Wh-wh-why the devil don't John Quincy tell us something like that?"

Doctor Byram:—When you attempt to teach freshmen students all these things, they cannot comprehend them, and, on the quiet, that young man arranged those teeth for Doctor Henshaw.

SUGGESTIONS

TO KEEP PYORRHEA POCKETS FREE FORM OUTSIDE IRRITANTS.

Doctor Younger.

After cleansing the roots of tartar, etc., and treating them with lactic acid, I dry the parts as perfectly as possible, then rubbing with alcohol to dry the roots; I then place over the parts bits of Japanese paper saturated with liquid celluloid, so as to form a protecting wall over the roots and edge of the gum. After that is done I take a thread and wind it around and tie it, to prevent all possibility of the paper getting out of position. The covering hardens and forms a perfect shield to the granulations, which grow up and fill the spaces between the roots. I have several cases in which the gums are growing in nicely.—*Cosmos.*

A METHOD OF TAKING THE BITE.

R. E. Luther.

Prepare the wax and base-plate in the usual manner. Instruct the patient to apply the tongue to the roof of the mouth as far back as possible. Allow him to do this several times, opening and closing the mouth before you insert the way, and explain to him the great importance of keeping his tongue in that particular spot. Place the bite material in position and again give instructions regarding the patient's part in the process. Now tell him to bite into the wax, cautioning him frequently to keep the tongue in the correct position.

The above applies in case of "squash" bite or when the bite for a lower plate is being taken. In taking the bite for the upper plate or for upper and lower, using the base-plate method, I instruct the patient to place the tongue on the extreme heel of the plate instead of in the roof of the mouth, and explain the absolute necessity of holding it tightly against the palate.

With the tongue in this position, and the patient's mind on the tongue, it is practically impossible for the lower jaw to be thrown forward or laterally out of the correct relation with the upper.

Another advantage of this method is in taking a bite for the edentulous lower jaw. The tongue is out of the way and does not interfere with or move the lower base-plate, and the operator may feel sure that the plate is resting correctly while the bite is being taken.

I have used this idea for the last two years with entire success, and am sure those who may try the method will be equally successful, providing they sufficiently impress patients with the importance of keeping the tongue in position.—*Cosmos.*

CAPPING PULPS IN YOUNG PATIENTS.

J. P. Buckley, Chicago.

I can conceive of only one condition where we are justified in capping the pulp, and that is in the mouth of a young patient where we suspect the root has not been fully developed. In such a case it is our plain duty to attempt to preserve this organ if only for a year; but the operation and its object should be explained to the parent or guardian with the instruction that the patient return at once in case of subsequent trouble. In older patients I do not think it good practice to try and save the pulp where caries has penetrated deeply, especially if the tooth has ached for any great length of time.—*Amer. Dental Journal.*

BURS VS. EXCAVATORS.

J. P. Root, Kansas City.

Essayists and advertising dealers all harp on the subject of sharp burs. We read pages and pages on the subject, our lecturers pound away day after day at the student, advising their use, the demonstrators publicly and privately reprimand the boys for using burs grandpa started practice with, and again 'tis no fallacy to assert that to a certain extent we should forget sharp burs and learn to use sharp excavators and small carborundum stones; the fact that dealers no longer carry in stock numbers of excavators formerly always on hand indicate that the present generation has taken the advice given by teachers, and use burs,

whether sharp or not, and are forgetting the other essential instruments for a successful operation—namely, excavators, chisels and stones.—*Extract Western Journal.*

HOW TO VULCANIZE.

In vulcanite work, for strength and to avoid secretions behind gum sections, vulcanize three hours, commencing at 280° Fahrenheit, running up to 290° the last half hour.—*Western Dental Journal.*

TO PREVENT FRACTURE OF RUBBER PLATES.

When gum sections are used to prevent fracture at the median line or between any of the sections after the wax has been washed out, pass a loop of platinum wire around the pins on either side of the joints; twist the ends of the wire together, flask and vulcanize.—*Western Dental Journal.*

THE INVESTMENT IN SOLDERING.

H. M. Kirk, Los Angeles, Cal.

As to the size of the investment, it should only be sufficiently large to fulfill its purpose, as just indicated. An excess of investing material is not only negatively useless, but positively detrimental to easy and successful soldering.

The reason is apparent. With a large investment more time and more heat is required to raise the invested case to the heat point, where soldering should first begin. Furthermore, more heat is required to maintain the case at the proper red heat during the soldering process.

The investment need only be large enough to extend, perhaps, one-quarter of an inch in all directions beyond the case invested; and in large or moderately large cases, such as a bridge or soldered denture, a band of brass or copper should embrace the entire investment. In very small pieces, as a crown or facing, it is not usually necessary.

Should an investment be found slightly faulty, or incomplete, after it has been prepared for the soldering process, such a condition may be easily rectified by adding, with a small camel's hair brush, a cream composed of whiting and water at the point or

points desired. This will adhere tightly and give ample protection to the part covered by it.

As a precautionary measure, well worth observing, we should always be sure that our shell crowns, for instance, be well filled with the investing material, and not partly filled with an air bubble; and also that no such air space exist in contact with gold plate in any kind of case.

For, should such a condition exist, the portion of gold plate immediately over the space becomes much hotter under the direct flame of the blowpipe, and frequently an unexpected, as well as undesired, hole is burned in the plate at the point where the air space existed.—*Gazette.*

RUBBER BRIDGES.

W. H. Shulze, Atchinson, Kan.

When, from loss of one or more of the anterior teeth in the upper jaw, there is considerable absorption, the bridge should have porcelain gum or pink rubber to restore the contour and sustain the lip. The old platè gum teeth can be used to great advantage. When a bicuspid and molar are lost, with the usual absorption, and the adjoining molars and bicuspids are sound, I have found that a rubber bridge with properly made and adapted clasps answers every demand, obviating grinding down the teeth. —*Western Journal*

CLEANING FILES.

C. J. Hadley, Chicago.

Saturate a tooth-brush with chloroform and scrub the file vigorously. This will remove all wax and modeling compound that become clogged in the serrations.—*Review.*

OXYPHOSPHATE OF COPPER FOR SETTING INLAYS.

J. E. Waterbury, Pasco Robles, Cal.

For inconspicuous cavities in molars and the backs of bicuspids I see no reason why the black oxyphosphate of copper cement would not be desirable—especially where much sensitiveness exists; since it exerts so beneficial an influence upon tooth structure, can be used very thin, sets quickly, and (*it is claimed*)

will not dissolve out, of course it would shade the inlay somewhat and there would be a black line at the joint, but this ought to be so thin as not to matter much in such a position, and durability and comfort are the principal points to be considered in such cases.—*Gazette.*

ADJUSTABLE MIRROR AN AID IN FUSING PORCELAIN.

J. E. Waterbury, Pasco Robles, Cal.

I believe my little *baking cabinet* has one point of excellence at least which is peculiarly its own. This is a small circular mirror so arranged upon an adjustable arm that it can be easily set to throw a beam of light directly into the opening in the muffle during the fusing process, and this enables the operator to note exactly its every stage; he can see it dry and bleach, then gradually shrink and finally commence to fuse, becoming more and more glassy and even on the surface until it is *just right,* when it must be immediately withdrawn, in order to get the greatest density, the best color and the least porosity—none of the latter at all if previous conditions were right. It is a beautiful process to watch, but before I evolved my *light* idea I missed half of its interest.—*Gazette.*

TO STOP HEMORRHAGE AFTER EXTRACTING.

P. S. Turner.

Dissolve antipyrene in campho-phenique, until a saturated solution is obtained. Make a plug of cotton to conform to socket. Saturate this with the solution, and pack into socket; apply compress if necessary. I have had good results with this when everything else failed.—*Review.*

INLAY SUGGESTIONS.

C. C. Patten, Boston.

Do not attempt approximal cavities in bicuspids and molars involving the grinding surface unless the latter portion can be made strong and thick, with no thin edges to be chipped in mastication, and be sure that the occlusion is made correct. In approximal cavities of whatever class be sure to have plenty of space secured by previous wedging. Cavities of this class

that under some conditions seem to be and are complicated become of the simplest character after proper separation.—*Extract International.*

PORCELAIN FOR LABIAL CAVITIES.

C. C. Patten, Boston.

In labial cavities the gum takes more kindly to porcelain than any material that can be used. The slight gingival irritation is seldom present; secretions do not collect or remain on it. Frail teeth needing the support of cement are most happily restored to a condition of harmony and usefulness. Irritation from thermal changes is reduced to a minimum, or, in fact, entirely eliminated. For teeth below medium in structure, and there are many of them that we are called upon to treat and repair, where the best work we can do will be but temporary with any of the other materials, porcelain will do years of service. Its value in repairing the teeth of young patients is beyond question.—*Extract International.*

A HANDY ASBESTOS BLOCK.

J. W. Hagey, Red Deer, Alberta.

I am using an asbestos block of my own make, and as I have found it very useful as well as easy to make, I decided to describe it and enable any dentist who may read this article to give it a trial. It is made in the following manner: Take sufficient asbestos rope, which may be obtained in any hardware store, thirty-six inches in length will be plenty, and coil it after a manner similar to that in which rope is coiled on board ship, until you have a coil from three to four inches in diameter. Cover this to the thickness of about one inch with a mixture of plaster of Paris and pumice, with some shreds of asbestos fibre. While the mass is still soft, insert three three-inch nails to form an equilateral triangle. When this hardens, you have an asbestos block that can be used on any table without danger of scorching the wood, and also at a very low cost.—*Dominion.*

TIN-FOIL FOR PROTECTING CEMENT WHILE SETTING.

M. G. McElhinney, Ottawa, Ont.

In cases where moisture can be excluded but a short time, press a piece of tin-foil over the fresh cement. It will adhere and protect the cement until hard.—*Review.*

STERILIZATION OF INSTRUMENTS.

W. D. Miller, Berlin.

For the rapid sterilization of instruments in general the formaldehyde is decidedly inferior to boiling, and personally I do not find that it has any material advantages over the five per cent. solution of lysol. For such instruments, however, as may not be boiled or even repeatedly bathed in lysol, as well as for sterilizing cotton, bibulous paper, etc., I have found a welcome help in the apparatus of Simundt.—*Cosmos.*

DEVICE TO CATCH INLAY MATRICES.

Doctor Hirshfield.

The device consists of a small metallic cup, which fits into a ring at the end of a handle, all being about like a mouth-mirror, only instead of a miror fitted into the ring, the cup slips into the ring and is detached when it contains the inlay, another cup being substituted.—*Cosmos.*

ASEPTIC DRESSING.

Doctor Hugenschmidt.

If you wish to be sure of a clean aseptic dressing, dip a piece of cotton in an alcoholic solution of boric acid, and burn it until the alcohol is all burned out.—*Cosmos.*

HOW TO PREPARE COTTON FOR ROOT FILLING.

Doctor Hotz.

I take a pellet of cotton and dip it in iodin and leave it to burn, then introduce it into the roots. I have had no failure; the cotton does not fall to pieces, you can introduce it without difficulty, and perhaps the iodin may be a better antiseptic than boric acid, which has been suggested to us to be used in this way to obtain sterilized cotton dressings by Doctor Hugenschmidt.—*Cosmos.*

INLAY SUGGESTION.

Geo. Evans.

I take the gold matrix and the Jenkins material, and after the first baking, readapt it to the cavity. I try it in, and gain considerable time by making the matrix and forming it in the cavity; I then pack in the body gently, remove it, and place it on a slab, the same as with a platinum matrix. Sometimes I apply the remainder of the material right into the matrix when it is in the cavity, and I can make it in the shortest time.—*Cosmos.*

AN AID IN REMOVAL OF GUM TISSUE.

In cases of the gum covering a cavity in which there may be possibly an exposed pulp to treat, much pain and annoyance will be saved by first applying trichloracetic acid, which destroys all organic matter but not inorganic. It does not matter if it should touch the pulp. In a quarter of an hour you will be able to cut away without any pain. It is very useful in case of difficulty erupting third molars; just put a few crystals between the gum and the tooth.—*Cosmos.*

CORRESPONDENCE

INFORMATION WANTED.

I have a problem which perhaps some of your readers may be able to help me solve: Patient, age 61; had scurvy while in Andersonville prison during the war. Health good, mouth in good shape, gums firm and apparently healthy. I made him a set of upper teeth on rubber base. Says when he puts plate in that they draw so hard that blood oozes from whole surface of gums so badly that he is unable to wear plate. The plate is entirely satisfactory in every way with this exception. I would like very much to put him in condition so plate will not cause bleeding. Who can tell me what to do? Would like to hear about this in THE SUMMARY.

Waterloo, Iowa. G. H. EDGINGTON.

TWENTY-FIVE PER CENT PLATINUM SOLDER.

Would respectfully call your attention to what I considered an error in judgment by Dr. H. E. Phillips, in his paper entitled, "Gold Solder vs. Twenty-five Per Cent. Platinum Solder in Porcelain Crown-work."

I heartily agree with the essayist's ideas regarding the use of the platinum solder, but do not agree with him in his theories concerning the absorption of the gold by the platinum. Instead of being taken up by the metal it is absorbed or enters into the porcelain, and when present in excess always causes porosity, no matter how carefully the porcelain is handled. A porous crown will not last very long, and my first principle is to discard any work that shows the least signs of trouble of this kind.

When pure gold is used as a solder for platinum it should be placed upon the surface that does not come in contact with the porcelain. J. M. THOMPSON.

Detroit, Mich.

SOCIETY

FOURTH INTERNATIONAL DENTAL CONGRESS.

COMMITTEE ON STATE AND LOCAL ORGANIZATIONS.

J. A. LIBBEY, *Chairman*, 524 Penn Avenue, Pittsburg, Pa.

Your attention is called to the Fourth International Dental Congress to be held at St. Louis, August 29th to September 3rd of this year, and you are now asked to become a member by filling out a blank and sending it, with the amount of the membership fee of $10, to the State chairman of your State, who will at once forward receipt for same. You will then in due course receive from Dr. C. S. Butler, Chairman of the Finance Committee, a membership in regular form. The membership will entitle you to all the privileges of the floor, and to vote upon all the questions which the Congress will be called upon to decide. It will also entitle you to participate in all the social functions under the same conditions as enjoyed by others; to a recognition button, which is a work of art, and worthy to be kept as a souvenir; also to the complete volumes of the proceedings, which, judging from the material already presented, will be the most complete exposition of modern dentistry yet published, embracing all branches of professional activity. This work alone will be fully worth the membership fee, and should be in the hands of every dentist. It will be sent to every member, whether he is able to be present at the Congress or not.

To avoid confusion and crowding of work at the last moment, you are urged to send your application at once. This will also give time to correct any error, should one by chance occur.

Nearly all the foreign countries are organized. National Committees in the several countries are actively promoting the work of the Congress abroad, and there will be a large foreign contingent in attendance. For the honor of the United States, and the glory of her dentists, let us make their visit a memorable one.

Every ethical practitioner is eligible to membership, whether he be a member of a State or local society or not. The application of any one who is not a member of any society must be accompanied by the endorsement of a society member, stating that the applicant is an ethical practitioner.

Let everyone make it his individual business to help at least to the extent of enrolling himself as a member and the success of the undertaking will be quickly assured. Apply at once to your State chairman. The State chairmen already appointed are—

STATES.

Alabama, H. Clay Hassell, Tuscaloosa; Arkansas, W. H. Buckley, 510½ Main St., Little Rock; California, H. P. Carlton, Crocker Bldg., San Francisco; Colorado, H. A. Fynn, 500 California Bldg., Denver; Connecticut, Henry McManus, 92 Pratt St., Hartford; Delaware, C. R. Jeffries, New Century Bldg., Wilmington; District of Columbia, W. N. Cogan, The Sherman, Washington; Florida, W. G. Mason, Tampa; Georgia, H. H. Johnson, Macon; Idaho, J. B. Burns, Payette; Illinois, J. E. Hinkins, 131 E. 53rd St., Chicago; Indiana, H. C. Kahlo, 115 E New York St., Indianapolis; Iowa, W. R. Clack, Clear Lake; Kansas, G. A. Esterly, Lawrence; Kentucky, H. B. Tileston, 314 Equitable Bldg., Louisville; Louisiana, Jules J. Sarrazin, 108 Bourbon St., New Orleans; Maine, H. A. Kelley, 609 Congress St., Portland; Maryland, W. G. Foster, 813 Eutaw St., Baltimore; Massachusetts, M. C. Smith, 3 Lee Hall, Lynn; Michigan, G. S. Shattuck, 539 Fourth Ave., Detroit; Minnesota, C. A. Van Duzee, 51 Germania Bank Bldg., St. Paul; Mississippi, W. R. Wright, Jackson; Missouri, J. W. Hull, Altman Bldg., Kansas City; Nebraska, H. A. Shannon, 1136 "O" St., Lincoln; New Hampshire, E. C. Blaisdell, Portsmouth; New Jersey, Alphonso Irwin, 425 Cooper St., Camden; New York, B. C. Nash, 142 W. 78th St., New York City; North Carolina, C. L. Alexander, Charlotte; Ohio, Henry Barnes, 1415 New England Bldg., Cleveland; Oklahoma, T. P. Bringhurst, Shawnee; Oregon, S. J. Barber, Maclay Bldg., Portland; Pennsylvania, H. E. Roberts, 1516 Locust St., Philadelphia; Rhode Island, D. F. Keefe, 315 Butler Exchange, Providence; South Carolina, J. T. Calvert, Spartanburg; South Dakota, E .S. O'Neil, Canton; Tennessee, J. P. Gray, Berry Block, Nashville; Texas, J. G. Fife, Dallas; Utah, W. L. Ellerbeck, 21 Hooper Bldg., Salt Lake City; Vermont, S. D. Hodge, Burlington; Virginia, F. W. Stiff, 2101 Churchill Ave., Richmond; Washington, G. W. Stryker, Everett; West Virginia, H. H. Harrison, 1141 Main St., Wheeling; Wisconsin, A. D. Gropper, 401 E. Water St., Milwaukee. For the Committee of Organization,

EDWARD C. KIRK, *Secretary.*

KENTUCKY STATE DENTAL SOCIETY.

The coming Annual Meeting of the Kentucky State Dental Association promises a dental convention of unusual interest; to be held in Louisville, May 17th, 18th and 19th.

Members of the profession are extended a hearty welcome.

W. M. RANDALL, *Secretary,*
Masonic Building,
Louisville, Ky.

EASTERN INDIANA DENTAL ASSOCIATION.

The annual meeting of this society will be held in Richmond, Ind., May 3 and 4.

JOINT DENTAL MEETING.

The Southwestern Michigan Dental Society and the Central Michigan Dental Association will hold a joint annual convention at Grand Rapids, Mich., April 12 and 13. From 100 to 150 delegates are expected.

NORTHERN OHIO DENTAL ASSOCIATION.

The forty-fifty annual meeting of the Northern Ohio Dental Association will be held in Cleveland, Ohio, June 7-8-9, 1904. The motto for the 1904 meeting is: "The Annihilation of Pain." Make arrangements to attend. Program will be printed in next issue of THE SUMMARY.

MICHIGAN STATE BOARD OF DENTAL EXAMINERS.

The State Board of Dental Examiners will meet in Grand Rapids, Mich., for examination of candidates for license, on May 10, 1904. For particulars, address

DR. W. C. MCKINNEY, *Secretary.*

Saginaw, Michigan.

NEBRASKA STATE BOARD OF DENTAL EXAMINERS.

The next meeting of the Nebraska State Board of Dental Examiners for the examination of applicants will be held in Omaha, April 27-28-29, 1904.

Applications and all necessary information furnished by the Secretary.

W. N. DORWARD, *Secretary.*

405 Paxton Block, Omaha, Nebraska.

ILLINOIS STATE DENTAL SOCIETY.

The fortieth annual meeting of the Illinois State Dental Society will be held at Peoria, Tuesday, Wednesday and Thursday, May 10th, 11th and 12th. A splendid program, including attractive and unusually interesting features, is under course of preparation. The usual fare of one and one-third—certificate plan—will be obtained on all roads in the State and from St. Louis. Remember the date. All reputable practitioners cordially invited.

HART J. GOSLEE, *Secretary.*

NORTHERN INDIANA DENTAL SOCIETY.

The sixteenth annual meeting of the Northern Indiana Dental Society will be held in Huntington, Indiana, on October 4 and 5, 1904.

Arrangements are being made to make this the greatest convention ever held in northern Indiana. Some of the best talent in the country has been secured.

OTTO U. KING, *Secretary.*

King Building, Huntington, Indiana.

NEW JERSEY STATE BOARD.

The New Jersey State Board of Registration and Examination in Dentistry will hold their semi-annual examination in the theoretical branches, in the assembly room of the State house at Trenton, N. J., on the 5th, 6th and 7th of July. Sessions beginning promptly at 9 a. m.

The practical prosthetic and practical operative work will be done in Newark. All applications must be in the hands of the secretary ten days prior to the examination.

For further information apply to the Secretary,

CHARLES A. MEEKER, D. D. S.

29 Fulton Street, Newark, N. J.

DENTAL SOCIETY OF THE STATE OF NEW YORK.

The thirty-sixth annual meeting will be held in Albany, N. Y., May 13-14, 1904.

PROGRAM.

President's Address.....R. H. Hofheinz, D. D. S.
Correspondent's Report.....Ellison Hillyer, D. D. S.
Report of Executive Council.....C. S. Butler, D. D. S.
Report of Committee on Practice.....F. W. Low, D. D. S.
Report of Committee on Scientific Research...H. D. Hatch, D. D. S.
Essay.....E. N. Jenkins, D. D. S, Dresden, Germany
Essay.....Joseph Head, D. D. S., Philadelphia, Pa.
Essay.....C. H. Land, D. D. S., Detroit, Mich.
Essay.....D. D. Smith, D. D. S., Philadelphia, Pa.
Essay.....Geo. E. Hunt, D. D. S., Indianapolis, Ind.
Essay.....B. Holly Smith, D. D. S., Baltimore, Md.
Essay.....W. J. Turner, D. D. S., Brooklyn, N. Y.
Essay.....C. W. Stainton, M. D. S., D. D. S., Buffalo, N. Y.
Essay.....I. L. M. Waugh, D. D. S., Buffalo, N. Y.

AFTERMATH

PERSONAL AND MISCELLANY.

A Dentist Inventor.—Dr. H. E. Dunn, Warren, Ohio, has invented an electric illuminator for the use of dentists.

Dr. W. E. Hoffhines, formerly located in Portsmouth, Ohio, is now associated with Dr. J. W. Chance, London, Ohio.

Located.—Doctor Moore, of Marysville, Kan., has bought out the practice of Dr. F. M. Davis, Holton, Kan., and located in that town.

Goes to Plattsburg.—Doctor Middleton, of Lathrop, Mo., has sold his practice to Doctor Smithers, of Paris, Mo., and will locate in Plattsburg.

Will Locate in Bombay, India.—Dr. D. H. Davison, of Streator, Ill., has gone to Bombay, India, where he expects to reside and practice dentistry.

Successful Candidates.—Nine of the eleven candidates for examination and registration in Wisconsin in January, successfully passed the Examining Board.

Going to California.—Dr. D. J. Dewey, Washington, Iowa, who has been in the practice of dentistry forty-one years in that place, has sold his practice and will go to California.

Entertained.—Dr. and Mrs. Williams Donally entertained the members and guests of the Southern Branch of the National Dental Association at their home in Washington on February 23rd.

Died in a Dentist's Chair.—Mrs. Marcia Higby, Lowville, N. Y., while having her teeth extracted by a dentist, died in his operating-chair while under the influence of ether administered by a physician.

Post-graduate Course.—The Dental College, Ohio, Medical University, Columbus, O., will give a post-graduate course to members of its alumni, beginning April 29th. The course will be given gratuitously.

To Be No Affiliation.—The proposed affiliation of the Chicago College of Dental Surgery with the University of Illinois will not take place as formerly announced, the contract between the two institutions having been annulled.

Loss By Thieves.—Dr. R. B. Munn, Freport, Ill., robbed February 17th; loss $250. Dr. Jere McGaughin, Rochester, N. Y., relieved of $300 worth of property March 4th. Dr. J. C. Gable, Lancaster, Pa., robbed February 20th; loss small.

After Dead-Beats.—Members of the Fond du Lac Dental Society have made lists of dead-beats and every member is furnished with a copy. They hope to either make this undesirable class of patients pay cash, or suffer from uncared-for teeth.

Odontological Society of Western Pennsylvania.—At the meeting held March, 1904, the following officers were elected: President, Dr. S. M. Stauffer, Pittsburg; vice-president, Doctor Cook, Beaver Falls; secretary, Dr. B. M. Loar, Mt. Pleasant; treasurer, J. A. Libbey, Pittsburg.

Knocking Out of Gold Fillings Causes Divorce Suit.—The loss of gold fillings from her teeth, caused by blows from her husband's fists, resulting in great pain, is set forth as a cause for divorce by Mrs. Francis Peterson, of Chicago, in a bill filed in the Circuit Court, February 18th.

Central Dental Association of Northern New Jersey.—Officers elected for 1904 are: President, C. S. Stockton; vice-president, I. S. Dunning; secretary, H. P. Marshall; treasurer, C. A. Meeker; executive committee, R. M. Sanger, W. M. Gould, N. M. Chitterling, F. L. Manning, F. W. Stevens.

Antikamnia Calendar.—This faithful reproduction of Getty's masterpiece, "Confidence," stands prominent for attractiveness, sweetness and beauty, among the many calendars for 1904. It will be mailed to any of our readers upon receipt of ten cents to cover postage, etc., by the Antikamnia Chemical Co., St. Louis, Mo.

Music Hath Charms.—Dr. C. B. McCarty has recently installed a pianola as a new and novel equipment to his office in Story City, Ia. The doctor has the instrument attached to his electric engine, and during the operations of filling or cleaning the teeth the insrument discourses music, thus doing away with anesthetics or cocaine.—Courier.

Montana State Dental Society.—The first annual meeting was held in Helena February 22nd and 23rd. The next meeting will be held at Butte, February, 1905. The following are the officers elected: W. H. Barth, Great Falls, president; J. D. Sutphen, Helena, first vice-president; J. Oettinger, Missoula, second vice-president; George Longeway, Great Falls, secretary; W. M. Billings, Helena, treasurer.

Peat Coal.—Dr. F. Osius, Detroit, Mich., has compounded a chemical formula for the conversion of raw peat into a substance so nearly resembling anthracite that the uninitiated would pronounce the peat product genuine coal. Doctor Osius claims for his product less weight, greater heat, and smaller cost than any other fuel on the market. He has applied for a patent on his formula.—Grand Rapids Herald.

Fires.—Pennsylvania College of Dental Surgery was damaged to the extent of $10,000 to $20,000 February 23rd. Crossed electric wires the supposed cause. At Geneseo, N. Y., Dr. C. J. Fraley sustained a loss of $500 by fire in his office February 28th. Office of Dr. Thos. Cullen, Oswego, N. Y., somewhat damaged by fire February 11th. Dental office of Dr. H. G. Hause, Brooklyn, N. Y., damaged to amount of $100 by fire February 15th.

Southern Board of the National Dental Association.—Officers elected are: President, Dr. Charles L. Alexander, Charlotte, N. C.; first vice-president, Dr. W. G. Mason, Tampa, Fla.; second vice-president, Dr. L. P. Dotterer, Charleston, S. C.; third vice-president, Dr. N. N. Vann, Attalla, Ala.; corresponding secretary, Dr. J. A. Gorman, Asheville, N. C.; recording secretary, Dr. J. Crosland, Montgomery, Ala.; treasurer, B. D. Brabson, Knoxville, Tenn.

Petition for Life-Saving Medal.—The Southern Branch of the National Dental Association decided to petition Congress to grant a life-saving medal to Dr. F. C. Wilson, of Savannah, Ga., one of its members, for rescuing from drowning, August 4 1896, Dr. J. J. Sarrazan, of New Orleans, another member. The southern dentists have already granted a medal to Doctor Wilson, and now desire that his brave act shall have national recognition. Dr. F. C. Foster, president of the Maryland Association, introduced the resolution.

Dioxogen.—A monograph descriptive of its physical and chemical properties, therapeutic action and uses in medicine, surgery and dentistry, and hygiene has been prepared by the Oakland Chemical Co., New York. It contains useful information for both dentist and physician. Dioxygen is used probably more extensively in dentistry today than any other one remedy, for it has proved its worth. It is invaluable to every dentist. The Oakland Co. will be pleased to send gratuitously a copy of this new monograph to any of our readers who desire one.

A Warning to Dentists.—I just had my office entered by one of those "slick fellows" who had previously made a date with me for dental work. He made appointments with several other dentists, but never showed up. I was relieved of teeth, a six-tooth bridge, gold scraps, filling, etc. We have no clue, only that he was a short, slight build, dark eyes and a slick talker. Perhaps this warning will put other dentists on their guard. My loss was about $50. Will state, also, that this fellow wore a partial upper plate, and had several cement and alloy fillings in his teeth.—C. S. Kelsey, Elyria, O.

Chance for an American Dentist.—The Emperor of Korea wants a dentist. The following note has been posted on the blackboard of the Berlin University: "Chance for an American.—The Emperor of Korea wants to appoint a dentist-surgeon for two years. Monthly salary, $150; in lieu of a house, $15; for voyage and return each time, $500; for instruments, $2,000; for laboratory, $25. Has to attend one hour weekly at the imperial palace. Annually two months' furlough. Private practice allowed. Knowledge of English or French necessary."

Dentist as a Peace-Maker.—During a feast which he gave not long ago the Emperor of Korea had the misfortune to break a tooth. His august majesty at once threw the chief cook and all the latter's assistants into prison. A dentist who was touring the hermit kingdom heard of the trouble and gave relief to the royal sufferer and was paid 1,000 yen (about $500), for his services. Then the imprisoned kitchen force was set at liberty, but the chief cook was sentenced to serve three months without pay. The emperor ordered another feast to celebrate the fact that the imperial jaw no longer ached.

Deaths.—Dr. G. L. Merritt, Dubuque, Ia., died February 28th after a long illness. Dr. I. S. Schoenbrod, Chicago, committed suicide by shooting February 22nd. Dr. L. D. Frost, pioneer, Harlan, Mich., dentist, is dead at 70 years. Dr. Byron Gordon, Rock Island, Ill., died February 16th, after a short illness from quinsy and complications; aged 63. Dr. Otis Avery, claimed to have been the oldest practicing dentist in the world, died at his home at Honesdale, Pa., February 24th at the age of 96. Dr. F. M. Schnee, found dead in his office, Saline, Kan., February 18th. Apoplexy supposed cause of death.

Will Sue Dentists.—According to reports Dr. J. O. Carmichael, Milwaukee, Wis., has brought and will bring suits against dentists using his patented system of bridge-work. Attorney H. P. Doolittle, of Washington, D. C., representative of the Patent Title and Guarantee Company, which has its central offices in New York, has been in Milwaukee collecting evidence to be used in the prosecution of the dentists who are alleged to have infringed on the Carmichael patents. When seen he said the company which he represents will handle the cases as they are brought against dentists in various parts of the United States. The Dental Protective Association proposes to protect its members against suit from such sources.

Had Teeth Extracted and Died.—Mrs. Oglebay had seventeen teeth extracted at Lafayette, Ind., March 4th. After the work had been completed it was found that the patient had suffered a stroke of apoplexy and was in a very serious condition. Almost immediately Mrs. Oglebay was driven to her home, and the shock of the long ride proved fatal. She died without gaining consciousness. Local physicians and dentists state that the death was not the result of the dentist's work, but was due to the thoughtlessness of her hus-

band. Dr. W. S. Walker, who was called at the time, advised that a few hours' rest be taken by the sufferer, but this the husband refused to heed, thinking that his wife would be better at home.

American Dentists in Trouble in Germany.—The highest court of appeal in the German empire has been busy with the case of three American dentists resident in Dresden, who were indicted for using the title "Dr. Dent. Surg." or "Dr. Chir. Dent.," after their names on the door plate. The German dentists in Dresden contended that the appearance of the title "Dr." conveyed a false impression. Doctor Hendricks and his two American colleagues proved that they got their degree from a school of American dental surgery, but the Court held that the Americans are not entitled to the use of the title "Doctor," that their use of it would be deceptive, and that if they persist in using it they must be punished.

New Jersey Dental Law Pronounced Good.—The Court of Errors and Appeals affirmed the decision of the Supreme Court in the case of the State of New Jersey against Martin V. Chapman. Chapman returned to this State several years ago after a long absence. He settled in Vineland and began practising dentistry without registering or submitting to an examination as required by the law governing the practice of dentistry. The State Board of Registration and Examination in Dentistry summoned him to appear for examination, but he refused to present himself. The board brought action against him and he was fined. The case went to the Supreme Court, which affirmed the conviction. Then it was appealed to the Court of Errors, with the result set forth.

Laval University to Have a Dental School.—A department of dental surgery will be established at Laval University, Montreal, Can., next October. This was the decision reached recently by the University Council at Quebec as a result of negotiation on the part of the Dental Association of the Province of Quebec with both Laval and McGill universities. The new department will be called "Laval University School of Dental Surgery." The dean will be Dr. E. Dubeau, who has been largely instrumental in the bettering of the conditions for the instruction of dental surgery. Doctor Dubeau has been secretary of the Board of Examiners of the Dental Association of this province. As a result of these new arrangements the Dental College of the Province of Quebec will be abolished at the end of the session.

Ontario Dental Society.—The following officers were elected at the meeting of the Ontario Dental Society held in Toronto February 9 to 11, 1904: Honorable president, R. E. Sparks, Kingston; president, A. W. Thornton, Chatham; vice-president, J. R. Mitchell, Perth; secretary, Guy G. Hume, Toronto; treasurer, R. Gordon McLean, Toronto; archivist, W. E. Willmott, Toronto; program committee, A. E. Webster, Toronto; G. Martin, Toronto; W. C. Trotter, Toronto; R. G. McLaughlin, Toronto; W. Seccomb, Toron-

to. District representatives—No. 1, A. A. Smith, Cornwall; No. 2, W. Adams, Whitby; No. 3, A. W. Spaulding, Toronto; No. 4, F. Hansel, Hamilton; No. 5, P. P. Ballachey, Brantford; No. 6, W. A. Brownlee, Mount Forest; No. 7, A. E. Santo, London.

Banquetted for Completing Fifty Years in Active Service.—An unique honor is that which was visited upon five prominent members of the dental profession in Philadelphia, on Saturday night, February 28th. Delegates from dental associations all over the United States, gathered at the Hotel Belvidere, at a banquet given to Dr. James Truman, Dr. Louis Jack, Dr. Storer How, Dr. C. N. Pierce, all of Philadelphia, and Dr. Ewise Haines, of Westchester, Pa. These men, beloved and honored in their profession everywhere, graduated from the Philadelphia Dental College just fifty years ago, and have remained in active practice ever since, a record almost without a parallel in other callings. Months ago the leading dentists of Philadelphia, aware of the approaching half century completion of the faithful work of their colleagues, communicated with sister associations in other parts of the country, with the result most gratifying to a concerned, of a spontaneous expression of a determination to banquet the five practitioners mentioned. Covers were laid for more than one hundred and fifty members, and the evening was given over to reminiscences of early days of these men and in glowing eulogy of their skill and length of service.

Recent Patents of Interest to Dentists.—

749846—Dental cement injecting-tube, Henry L. Cruttenden, Northfield, Minn.

749899—Sprayer for dental polishing and grinding instruments. Henry H. Gantz, Albia, Iowa.

750203—Dental articulator, Lewis Knight, Beloit, Kan.

750615—Dental appliance, Wilber M. Dailey, New York, N. Y.

750695—Rubber-dam holder, Andrew J. Price, Dobson, Miss.

715950—Dental mouth-mirror, Warren M. Sharp, Binghamton, N. Y.

751582—Strengthener for vulcanite artificial teeth bases, Robert Walker, London, England.

751592—Artificial tooth crown mounting, Thomas H. Whiteside, Youngstown, Ohio.

Copies of above patents may be obtained for ten cents each by addressing John A. Saul, solicitor of patents, Fendall Building, Washington, D. C.

What Others Say About The Dental Summary.—"I wish to congratulate you on your continually advancing journal, The Summary. I thought you had gone your limit last year, but your January, February and March numbers are better than ever."—E. G. Smith, St. Paul, Minn.

"I like The Dental Summary very much. I get many valuable ideas from it."—G. H. Edgington, Waterloo, Iowa.

"Could not get along very well without The Dental Summary."—H. J. Shaffer, Wampum, Pa.

"The Dental Summary is all right—none better, and I take three others."—C. R. Calkins, Perry, N. Y.

"Through some error you failed to send February number of The Dental Summary. It is too valuable to lose a single copy, so please supply and oblige."—R. R. Conroy, Milwaukee, Wis.

"Inclosed please find $1.00 for The Dental Summary for 1904. This journal was a new one on me, but it is all right. I have enjoyed every line of its contents this year so far, and will hope for the continuance of the interest. It seems to settle quietly into practicalities and helps an 'ordinary tooth mechanic' to feel at home. I am pleased with it, dear brethren, and being an editor myself (The Round-Up) can appreciate the efforts of your editor, Doctor Bethel."—Herbert Lake, Calgary, Alberta.

REGULAR CONTRIBUTIONS

A METHOD OF MAKING PLATES WITHOUT THE USE OF WAX.*

BY DR. A. S. PAGE, COLUMBIA, TENN.

In presenting this method to this association I do not lay any claim to originality nor do I mean that as a whole it is anything new, but there is one feature about it that is new, and I think very commendable, and it is my desire to bring out this and to have the whole matter discussed and learn whether it will do to adopt and stand the test of time.

In a nutshell this method consists in the use of vulcanizable gutta-percha as a base combined with pink rubber for gum surface. As stated above, the use of both of these materials is nothing new, but the manner of combining the two is the new feature.

Success with this as with all other methods presupposes a perfect impression and model and good bite. Having the articulated model, use vulcanizable gutta-percha just as you would base-plate wax, setting up the teeth in the normal way, making the whole plate of this material except a portion on the buccal and labial portion, of about the thickness of an ordinary sheet of base-plate wax—this is to be made of pink rubber. Having done this, try plate in mouth to get the articulation perfectly correct and make any alteration on that line that may be necessary. Next remove all the teeth from plate by heating them slightly. Next cut a piece of pink rubber sufficiently wide to extend from the imprint of the pin in the gutta-percha to the rim of plate and

*Read before the Tennessee State Dental Society, 1903.

long enough to extend from heel to heel of plate anteriorly. Soften this somewhat by heating a little and also the surface of the plate to be veneered. Put pink rubber in place and heat each tooth at neck separately and press it into the pocket it originally occupied carrying the pink rubber with it, at the same time pressing the rubber to the gum surface all around and cut off the surplus. Again try in mouth to see that articulation is correct.

Next by use of rubber cement—made by dissolving pieces of gutta-percha in gasoline—cement plate to model thoroughly; invest with one mix of plaster, being careful not to get any bubbles in same, place bolts in flask and vulcanize in usual way.

In finishing up use only a stiff brush wheel and pumice and chalk on gum surface and finish other parts of plate in usual manner.

This, I think, makes a more natural gum surface than can possibly be made in the usual manner by carving, etc. Another advantage is the trial of the plate in the mouth just as it will be in the finished form as there can be no possible change as there is so likely to be in the use of rubber, separation of flask and other tedious processes.

Another advantage, and a most important one to a busy dentist, is the saving of time, as a plate can be made and finished by this method in at least half the time consumed by the use of rubber, etc.

For repair work this method is par excellence.

The only question of doubt is as to its durability. Will the gutta-percha stand the test of time in the mouth? So far I have only been able to find a small article relative to this, and that states that in time it will become so brittle as to almost break at touch. But I have it indirectly from some that have used it for years, that it is just as durable as rubber.

The gutta-percha used is a combination of the juice of a forest tree grown in Borneo and Sumatra and sulphur and vermilion very similar to the combination used in making rubber. I know that this method has been demonstrated to a great many of our profession all over the country and many are likely to adopt it without investigating fully its merits or demerits and it is to have these discussed and get the opinion of those that have had some experience with this material that I have written this paper.

GOLD INLAYS.*

BY STANLEY L. RICH, D. D. S., NASHVILLE, TENN.

My idea in presenting this clinic was merely to exhibit models of cases in which I think the gold inlay is especially applicable and to explain a method of constructing inlays for which I can claim no originality but which I have found quite successful.

METHOD OF CONSTRUCTION.

My method is as follows: The cavity having been prepared to receive an inlay, an accurate modeling compound impression of the cavity is taken and a plaster model made. A die of this model is then made by the use of the Melotte outfit. On this die a matrix of 24k., 34 gauge gold is swaged, allowing the gold to extend a little over the margins. This matrix is then placed in the cavity and burnished to an accurate fit, after which the margins are coated with a solution of chalk in water to keep the solder from this part of the matrix and the rest is stiffened with 22k. solder. The matrix is then replaced in the cavity and the margins are burnished again in order to obtain a perfect fit. The next step is to take a modeling compound impression and bite with the matrix in position. The matrix will usually come away with the impression. Pour investment into the matrix side of the bite and plaster into other side and articulate. Remove the compound and you have your matrix in place on the model. Press a little soft compound into the matrix and close the articulator, thus securing the impress of the opposing teeth. Then carve your cusp and contour, letting the overlapping margins of the matrix extend beyond the compound. Next secure a die of the investment tooth with the matrix and compound cusp in position and swage a cusp of 22k., 34 gauge gold. At some convenient point in the cusp cut out a little window just large enough to drop pieces of solder through, then place the cusp on the articulator and burnish the edges until it makes a good joint with the edges of the matrix. Next remove the compound cusp from the matrix and replace the gold cusp, sticking it with wax. Cut the investment tooth, with the matrix and cusp in position, from the articulator and pass a piece of binding wire around the whole so as to hold the cusp in position. Then drop in pieces of 20k. solder with a little borax

*Table Clinic at Tennessee State Dental Society, 1903.

through the window and hold in the Bunsen flame until the solder flows, then add more solder and fuse until the inlay is full and finish by fusing a piece of 20k. solder over the window with a blowpipe.

Next grind down the margins of the inlay, doing as much of this as possible with the inlay in position on the tooth. Then polish the inlay and if necessary cut some grooves in it to aid in its retention. The inlay is then ready to be cemented into the cavity.

GOLD INLAYS.*

BY DR. W. C. GILLESPIE, NASHVILLE, TENN.

The essayist wishes to present only a brief paper for your consideration, and will exhibit a model in illustration, hoping to contribute a few practical ideas to the general fund. We will briefly consider the general aspect of inlay work first, with reference to its practical application and the nature of restorations to be made by inlays, or its indications, and conclude with a few remarks on construction of the matrix by a procedure differing materially from the ordinary methods employed.

Those cavities in which inlays may be most advantageously employed are large cavities in the occlusal surfaces of molars and bicuspids, and compound cavities in these teeth, involving proximal surfaces and the restoration of cusps. The intent of this paper is to deal with the inlay proper and not intended to embrace those restorations of incision edges of centrals, laterals and cuspids where retention is secured by means of pins. This first point of advantage of the inlay over the ordinary foil filling is its capacity for, or property of, resisting the strain and wear of occlusion and mastication. Its hardness and toughness prevents the scarring and battering so often observed on the surfaces of foil fillings and the flaking off of particles of the gold along the margins. The softness of pure gold permits of change of shape of the gold filling under stress and the fracturing of thin enamel walls or margins. This stress the inlay is able to withstand and will often preserve such frail wall or margin for years where otherwise it would have become defective. The use of the inlay, through this property, reduces the amount of cutting away of

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tooth structure requisite to proper preparation of cavity for ordinary gold filling—it requires less "extension for pevention," in that a frailer wall may be protected by an inlay than by filling.

Cusps may be fully restored by use of inlay, where were foil used, they would be in more or less imminent danger of being forced or battered off.

There being no malleting in the adaptation of the matrix, no pulverizing of enamel margins occurs. The swaging force required to retain the filling in various forms of retention often exerts sufficient pressure upon thin enamel walls to cause cracks which will eventually end in the chipping away of edges or entire wall. Even though no crack appears, the force exerted upon the walls by lateral spread of gold under stress of condensation leaves the walls slightly sprung apart and under sufficient strain to cause them to be much more easily fractured by a shock or strain than would be the case were the enamel rods not bent or forced out of their normal line of direction. This may be easily shown by slightly bending a piece of glass or other friable or brittle substance and tapping it, when a much lighter blow will break it than otherwise. Oftentimes the pressure of the gold under condensation may be all but sufficient to break away the wall, or weakest portion, and thus it is left to wait patiently until the little additional force needed to accomplish the impending disaster is supplied by conditions.

In the insertion of the inlay no such pressure or stress is brought to bear upon these frail walls and a much greater stress may be withstood from without.

Another point in favor of the inlay is the lessened inconveniences to patient undergoing the operation and lessened amount of physical strain upon the operator.

More time may be required to make the inlay than the filling but the work is less exhausting to both patient and operator. In many cases the insertion of a filling would require much more time, labor and skill than the inlay.

The permanence of the inlay is in direct proportion to the accuracy of adaptation of matrix to the cavity margins. Where inaccuracy exists, by so much is the permanency of the inlay reduced. If the marginal adaptation is perfect the inlay is in no wise inferior to the filling and in many ways superior to it. Many gold fillings that have been put in would have done far

more creditable service as inlays than as fillings and were they dislodged *en masse* and reinserted with cement they would preserve the tooth a longer period after the second insertion as inlays than they did as fillings.

One thing that was a serious objection in the opinion of the essayist for a long time to the use of inlays was the washing out of the cement around the margins. That objection has been discarded upon the result of observation of non-recurrence of decay around cement fillings, and the fact that if the matrix is accurately adapted there will be no washing out of cement. The essayist has seen inlays or restorations of proximal contours of incisors and bicuspids that had been in the mouth six or seven years and retained only by pins—the cement having all been washed out, leaving a space equal to the thickness of heavy wrapping paper all around the margins and not the slightest indication of recurring decay. This non-recurrence of decay is attributable to the preservative action of the cement upon the tooth structure, and of course the mere fact of the employment of a special form of gold to restore the contour had nothing to do with it. The action of the cement will preserve the margins or prevent recurrence of decay around an inlay where, had the most perfect filling been put in, decay would have again appeared. It not only renders healthy, normal enamel practically immune—at least so for a number of years—but it also gives immunity to that tooth structure already begun to undergo the action of carious disintegration. Thus does it render the inlay superior to the filling in permanency.

Now the essayist does not wish to create the idea that inlays are always to be preferred to gold fillings, nor that they are always easier to be made, and does not care to be criticised in the discussion of the paper as having claimed the inlay to be *the* restoration of all others for lost tooth structure, for no such claim is made or implied. Wisdom is always required to decide what method of procedure is most calculated to secure best results in any operation, and the thoughts set forth in this paper are to explain the advantages of the inlay when properly introduced into a cavity, and it is up to each operator to exercise his own judgment when to use them and when not to. If the operation isn't a success it will be because the operator's judgment or skill, or both, were defective, and through no fault of the inlay.

Not all nor nearly all has been included in this paper that could be said. Something must be left for those who discuss it.

METHOD OF SECURING AN ACCURATE MATRIX.

I will now briefly describe a method of securing an accurate matrix that has stood practical tests at the hands of the essayist and the results have been most gratifying. Observe the usual steps of cavity preparation for inlays.

Take a half or whole sheet—as size of cavity requires—of Ney's *non*-cohesive foil No. 4. Fold in half and continue to fold until mat is formed just large enough to form matrix and have slight overlapping margins.

Burnish thoroughly to walls and margins of cavity with suitable instruments. After adapting matrix to floor and walls of cavity a pellet of cotton should be packed into matrix to hold it firmly in place while adapting margins. By using the mat of non-cohesive foil the layers slide readily over each other and but a few moments are required to obtain the required shape. There is no springing or rocking of matrix as when gold plate is used.

Now remove matrix and anneal—Ney's foil becoming *cohesive* upon being annealed. Replace in cavity and burnish again, thus burnishing the separate layers into one sheet—the same as if gold plate had been used. Any folds or wrinkles in forming the matrix in the non-cohesive state now become ribs to stiffen sides of matrix and make it more rigid.

After the annealing and second burnishing have been completed and while the matrix is still in place, take a pellet of Parr's flux wax and press it firmly into and filling the matrix. This causes the matrix to be forced in contact with the walls and margins at every point and the wax holds it there firmly. The point of an instrument may be now stuck in the wax and matrix and wax lifted out, and the wax prevents any warping or springing of the matrix in removing and subsequent handling. Do not let the wax cover the overlapping edges of the matrix as these are intended for the investment to grasp and hold to prevent contraction of solder changing shape of matrix. Invest and fill with solder and you will have a perfect inlay. Finish up and set in the usual way.

Where cusps or contour are to be restored: Proceed as above described. After the wax has been forced into matrix, chill with

cold water and carve up wax to occlude and burnish a second mat of foil over the carved up wax, leaving surface of wax exposed at whatever point it is most convenient to introduce the solder. The gold burnished over the wax adheres to the surface and is held in proper place. Invest, burn out the wax and solder up.

The last grinding should be done in the mouth, always grinding *toward* the margin.

Undercut the cavity for retention and with wheel or inverted-cone bur roughen sides of inlay so that the cement used to set inlay will act as doweling pin as well as through its adhesiveness to retain inlay firmly in cavity.

Polish in usual manner and results will be entirely satisfactory to both patient and operator.

PALATO-APPROXIMAL GOLD INLAYS.*

BY DR. J. P. CORLEY, GREENSBORO, ALA.

Next to the grinding surface of the first molars, the most favorite locality for the ravages of dental caries is in the approximal surface of the central incisors.

If the case comes to the operator before the labial or lingual plate is lost, a non-cohesive foil filling is, beyond all question, the most desirable treatment, but in many instances we find that these lateral plates are insufficiently strong to bear for a life-time the pressure necessary for the condensation of soft foil. Cohesive foil being precluded in proportion to the elasticity and friability of these walls. In cases where these plates can both be preserved by the use of a cement filling an inlay or gold veneering perfectly adapted to the enamel margins will make the ideal filling and is the nearest possible approach to a physical as well as an anatomical restoration of the tooth.

But it is for palato-approximal restorations that we find the greatest utility for the anterior gold inlay. In this class of cavities we usually have a thin labial plate. The mesio-incisal corner has lost all of its underlying dentine, or if it has not been destroyed by caries the operator usually cuts it out in order to make his apical retention. This then leaves us with the mesial half of the incisive edge of the tooth composed of only enamel and con-

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nected with the main body of the tooth by a thin ledge of the same.

Clinical experience, as well as the laws of physics and physiology, teaches us that when we put a foil filling in this class of cavities we lay a contribution on the tooth which will ultimately compass the destruction of the anchorage which holds it intact, and that this loss will often include the mesio-incisal cover. The condition of the tooth will then be like the proverbial consort whose last state was worse than his first.

The tooth has had a histo-physico-anatomical loss. It has also been rendered intensely more vulnerable to decay. A foil filling renders it immune from decay and restores its anatomy, while the inlay does this and more. It makes a complete physical restoration, one of the most important factors in its durability.

Only one other object could be desired—the reclamation of its histology and that according to the apostles of the non-nutritive theory (one of whom, however, I am not) is of no consequence.

The process of making and inserting gold inlays is so simple and so generally understood that a man who can back a porcelain facing or insert a good cement filling can do it with greater care to himself and less discomfort to his patient than will be required in the introduction of a foil filling.

The one point which I wish to emphasize beyond all others is this: the best gold inlay is the one which in thickness is scarely more than a veneering. The object of the class of inlays which I have been describing is simple surface protection. Its degree of thickness has therefore but two objects, one is to prevent its being worn through (a scarcely possible contingency) and the other is to afford a suitable surface for the cohesion of the cement. No force can be brought to bear upon it in a direction which would have a tendency to dislodge it, therefore the question of retention need give little concern.

THE INSPIRATION AND TECHNIC OF AN INLAY.*

BY DR. J. H. CROSSLAND, MONTGOMERY, ALA.

In the breast of every true professional man there abides an eternal desire to render to each and every client the best services

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permitted by the limitations of his ability. Yet, when I say that, at times, a glorious inspiration enters the door with the patient, the least sentimental of you, perhaps, will not question the correctness of the statement. So, something of the personality of this "inspiration" may not be out of place.

She walks in beauty, like the night
  Of cloudless climes and starry skies;
And all that's best of dark and bright
  Meet in her aspect and her eyes;
Thus mellowed to that tender light
  Which heaven to gaudy day denies.

One shade the more, one ray the less,
  Had half impaired the nameless grace
Which waves in every raven tress,
  Or softly lightens o'er her face;
Where thoughts serenly sweet express
  How pure, how dear, their dwelling place.

And on that cheek, and o'er that brow,
  So soft, so calm, yet eloquent,
The smiles that win, the tints that glow,
  But tell of days in goodness spent.
A mind at peace with all below,
  A heart whose love is innocence.

Yet, why to "the smiles that win," doth such sudden endings come? Gums more beautiful than coral, breath more daintily fragrant than zephyrs from a rose bower. Oh! such gums, and oh! such breath—no antiseptic ere had roughened the one or scented the other; pure water, nature's glorious detergent, the only gargle and the only dentrifice that had found its way into that place of beauty. And the ivory organs there—more delicately beautiful than any shell from any shore.

But, alas! there's a glistening, glittering, glinting thing which reflects its auric presence on the divine curve of that ruby lip. Some lesion or disturbance of the dermic tissues whence enamel come had caused a depression, deep and irregular, in an incisor's face; and the remedy had been worse than the lesion. Her outraged esthetic nature revealed in every word and gesture, pointing to the gleaming thing, she said, "Oh! can you not, by some means, relieve my embarrassment?" Realizing that my heart was not white enough nor in any way compatible with the hallowed place and that a disc cut from it would not serve the

purpose, I thought and thought of—other things. Porcelain inlays I had made, some retained by circlets of gold, others by cement alone. None had pleased me perfectly. Nothing seemed worthy to repose in this beautiful temple of this beautiful soul. And as I thought and pondered, again came the glorious light of "the smiles that win." "Certainly those deft fingers that never failed to fashion beautiful things from almost nothing, if need be, to please my youthful fancy and flatter my youthful pride, in happy days gone by, cannot fail to place something there that will be less conspicuous and more in harmony with the esthetic tastes which you have flatteringly attributed to me." Something said to me, "Turn, turn, giddy knight of foil and plugger, turn from the glowing furnace where the ceramist holds his firey sway, turn to nature, just for today."

Slowly and steadily an inlay bur sank into a golden plug, and ground pearly margins to a circle. A slab of enamel, sawn from a bicuspid removed from a healthy child's mouth that a deformity might not continue, was placed in boiling water for a half hour; then ground to approximately circular form, and cemented to a mandrel. Held lightly against a corundum slab and kept wet and rapidly revolved it soon became perfectly circular. Tried often in a cavity made in an ivory slab with the same bur, it finally entered nearly to the required depth. The cavity in the tooth was filled with alcohol and a little pumice dusted in; and the disc placed in the cavity and revolved. The result was what is called in mechanics, a ground joint, such as is seen in glass-stoppered bottles, perhaps the most perfect joint that can be made between non-malleable and non-plastic substances. Washing out the pumice and swabbing out the cavity with alcohol and drying it thoroughly, it was smeared with thinly mixed cement, and the inlay pressed in with the finger. When the cement had hardened the protruding portion of the transplanted enamel was ground down and polished and the specks left at the margins by particles of corundum clinging there washed away with a solution of sulphuric acid, followed by bicarbonate of soda.

A mirror was handed her, and no more beautiful picture ever greeted the eye and heart of a weary dentist than this beautiful, cultured woman, as she exclaimed, "Perfect triumph of art—art concealing art."

No less a man than your gifted Crawford has said, "A por-

celain inlay is the most perfect dental operation that has yet been done." In my humble opinion, in a case where circular form can be given the cavity without too great sacrifice of structure, the natural enamel approaches more nearly the ideal. Porcelain baking is an art within itself and perfect matching and blending of colors and shades is not certain even among experts. But nature, by some mysterious process, changes the shade of enamel to harmonize with that of the tooth into which it has been set; and in only a few weeks.

Then, enamel can be ground to exactly a level with the surrounding surface while the fact that we cannot perfectly polish porcelain makes it impractical to trim it on the surface. Then, enamel is a non-conductor of heat and cold and porcelain is not. The ground joint is, in my opinion, a practically perfect one—superior to that made with the fictile substance. The stony, glistening, glassy appearance of porcelain is always more or less in evidence, and is more conspicuous in the inlay than in the crown or artificial tooth, by reason of its more intimate relationship with the tooth of whose substance it is to form a part. Enamel is entirely free from any objection as to surface, for it was made by nature for a similar place. Examination of the specimen enclosed will, I think, demonstrate the fact that a very close joint can be made in this way.

The amount of cement is exceedingly small, and perhaps all present will agree that in very close joints cement stands indefinitely and protects the root that bears the crown. I believe that a watertight joint can be made in this way and the inlay pressed in without cement, and the tooth preserved.

It is far from my desire to deprecate, in the slightest degree, the merits of the porcelain inlay baked in a platinum matrix. It has its place in advanced dental practice, and will, as time and improvements go on, become more firmly established and more generally used. Its range of adaptability is wider and its application generally requires less sacrifice of structure.

In conclusion permit me to suggest that if you desire real enlightenment on the "inspiration of an enamel inlay," call on young Freeman from Cumberland's classic shores. I thank you for the compliment of the invitation to contribute to a meeting which will be attended by so many skilled and learned men.

Addenda. The above was written more than a year ago and

sent to Doctor Corley, then chairman of your committee on clinics, but it failed to reach him in time for the meeting. At the request of Doctor Meadors it is returned for presentation at your present meeting. Rereading it after a year has passed, I am constrained to add the following suggestions: The copper trephines charged with diamond dust, called diamond trephines, offered by The S. S. White Co. greatly facilitate the grinding of these inlays, but they must always be one or more numbers larger than the bur with which the cavity is formed, as those of the same number will not cut one that will fit with sufficient accuracy for this work. For the benefit of those who do not concede the probability of the indefinite duration of the infinitesimal amount of cement used to perfect the adaptation, the use of chloro-percha is suggested, also thin gold foil—No. 3 or No. 4. Slightly bevel the inner edge of the inlay—just enough to remove its sharpness and prevent its cutting the foil—cover it with the gold and press it to place with a piece of soft wood. The gold rim thus placed around the margins will be practically invisible and practically perfectly adapted, as you will see from the specimen in fang of cuspid accompanying this paper. Cavities of semilunar form, such as are so frequently found in the labial surfaces of superior incisors and cuspids, may be filled with enamel by the insertion of several inlays, some cutting into others, as it were, and varying in size. Do not polish an inlay more highly than the surrounding surface of the tooth, lest you make it conspicuous.

THE IMPORTANCE OF RECORDING THE TECHNIC OF ORAL MEDICATIONS.*

BY DR. J. L. MEWBORN, MEMPHIS, TENN.

About fifteen years ago, Mr. LaPrade, of Memphis, came to me to have the lower incisors extracted and a partial plate made. I found the alveolus and gum around these teeth so completely absorbed from pyorrhea that in an attempt to bite some hard substance two of the teeth had been bent down or straightened outward. As bridge-work was not thoroughly appreciated at that date, and the old method of replacing them was so unsatis-

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factory, I advised treatment with no other hope than to hold the disease in check so as to retain the teeth a few years longer. After thoroughly cleansing these exposed and naked roots, wiring the teeth firmly in position and grinding off the occlusal tips, I began systematically to experiment with every remedy I had ever heard of; such as chloride of zinc, sulphate of zinc, sulphuric acid, aconite and iodine, tincture of capsicum, tr. of cantharides, pepsin, alum, camphor, quinine, etc., all indiscriminately used in varied combinations and dilutions. These remedies were applied every other day for six weeks, then an appointment made one years hence.

In the meantime phenol-sodique was used freely as a mouth-wash. At each annual seance there seemed to be a constant reproduction and building up of bone and gum tissues around these naked roots until the fourth year, when I was astonished to find the process completed to the original gum line, and the teeth as firm and as hard to extract as they ever were. This seemingly miraculous result was obtained fifteen years ago, and to this day there has been no return of the disease. But as I kept no record of the proportions, the method of combining, the means of applying these remedies, nor the effect produced by each change, the secret was lost and I have never been able to obtain the same results since. I know of many good things I have lost by failing to keep a minute record of the medications used, as well as the mechanical process used in diseased conditions. No doubt many of you have had your confidence shaken after failing, time and again, to obtain the same boasted results as in some former noted case, simply, in fact, because you had kept no record, and failed to follow the same technic. The field of the dentist's operations is limited; any organ or portion of that organ is rendered easy of access and subject to any operation by means of the limitless variety of styles and shapes of dental implements furnished ready to his hand.

But his equipment of well-authenticated specific medications is limited. He is no chemist nor microscopist, able to analyze diseased conditions, nor pharmacist able to compound remedies suited to these diseased conditions; necessarily, therefore, he is forced to experiment a great deal. You experiment with antiseptics and dozens of other medicaments every day, but do you keep a record so that you and the profession may be benefited both by *your* mistakes *as well as your* successes?

FORMALIN IN DENTISTRY.

At the suggestion of Doctor Jelks I have been experimenting for the past year with formalin in dentistry. Before giving you my notes on its use in dentistry I shall give you something of its early history and valuable properties. Formalin is a saturated, cold, aqueous solution of formaldehyde gas of about forty per cent by weight of gas. In 1886, its powerful bacteriological properties were reported by Lowe. Doctor Holt, president of the board of health at New Orleans, at once recognized its great value in sterilizing houses and shipping that had been infected with yellow fever, and used it for that purpose with great success. Two ounces of formalin evaporated in an ordinary living-room infected with germs of the most contageous diseases, after all openings have been corked up, will in twenty-four hours, destroy every micro-organism within its walls. One to twenty thousand dilution in milk will keep it pure and sweet for a week, no matter how much it thunders. Inject the veins of a dead dog full of a one-half per cent. solution of formalin and place him on a stump in the broiling sun and he will stand there six months before any signs of decomposition will be seen. The human body properly embalmed with it may be preserved almost indefinitely. One-tenth of one per cent. with Pond's extract will purify the breath or remove unpleasant odors from any part of the body. Daniel rubs formalin into warts with a stick and these shrink and come off without a scar. Surgically it is an antiseptic of great power and is indispensable for sterilizing hands, dressings, surgical instruments, etc., etc. Since Doctor Barrow saved the life of a patient in Belleview hospital about six months ago by injecting 300 meters of a 1 to 5000 solution into the veins of the patient it has suddenly become more famous than any germicide ever brought to notice of the medical world. My first case treated with formalin was Mr. Fair, aged sixty, putrescent antrum, brought to me by Doctor Byrnes; had very little pain, but slight discharge, and intolerable odor from right nostril. I extracted the right second molar, which had been dead several years. After washing out the cavity with hot water, with a long, coarse, cross-cut fissure-bur in the engine at high speed, giving the instrument a sawing motion as it revolved, I sawed out a little button of dead bone and process which was embraced between and around the roots of the extracted tooth, embracing the floor of the

antrum. This gave easy access to the cavity. With a two per cent. solution of formalin in the nebulizer or atomizer connected to one of these compressed-air receivers, with a pressure of about fifty pounds to the square inch, the medication was introduced into the cavity in a perfect fog of vapor. For about five minutes after each treatment the mucous membrane of the antrum and nose were sensible of a very peculiar biting sensation, which soon passed off. Without any other treatment whatever this case was cured in two weeks. A few months after this case a Mrs. Lewis, who had been suffering intense pains in her face and head for several months and could get no relief, came to me; I found a large abscess in the roof of the mouth, pus running from the sockets of the left, central and cuspid teeth, which had been recently extracted. The second bicuspid, the only tooth remaining from the median line back to the first molar, was perfectly loose, evidently seated in a bed of pus. From this point pus had burrowed along the surface of the bone to the central incisor, ripping up a considerable extent of periosteum and discharging freely through the root sockets and other fistulous outlets. I opened abscess in roof of mouth, extracted the second bicuspid, and through this socket washed out the antrum with hot water, then with one drachm of the forty per cent. solution of formalin to one quart of hot water used four or five times daily I kept the antrum, the root sockets and the pus tracts under the periosteum thoroughly washed, using a strong chip-blower. In six weeks, with *no other treatment*, this case was cured without the loss of a particle of bone, notwithstanding the extensive necrotic condition in that whole side of the face. The next case, a negro man, sixty years old, sent by the (Cold) physician of Marked Tree, Arkansas, to Doctor Fields, a colored dentist of Memphis. Fields brought this case to me for consultation. I found the jaw fractured at the median line by a bullet wound in the point of the chin. All the lower teeth were gone except six or eight anterior ones and they were broken and worn so that only about two antagonized with the upper teeth. The accident had occurred about two weeks before and no attention had been given except to wear a bandage around the jaw. The most offensive necrotic pus was constantly dribbling from the bullet-hole in the chin and boiling up from a fistula within the mouth. The old coon had plenty of sand in his gizzard, but no money in his paw. Under these cir-

cumstances I recommended an external splint to be moulded to the jaw while the fracture was in close apposition, composed of about four thicknesses of base-plate gutta-percha, worn with a bandage around the jaw, and the wound to be thoroughly syringed out four or five times daily with a solution of formalin, one drachm to one quart of water, used warm. With this treatment the above case, I understand, progressed satisfactorily with no necrosed bone.

In a case of putrescent pulp, remove decay, open up pulp chamber, ream out root canal so as to reach the apical space, syringe well with a ten per cent. solution of formalin, being sure that a little passes through the apex of the root to the apical space; pack the root canal and pulp chamber loosely with a wisp of cotton saturated with the ten per cent. solution of formalin. In twenty-four hours remove this dressing and fill the root permanently. Where there is a fistulous abscess, open up the tooth as above and force a ten per cent. solution of formalin through the tooth out at the fistula; treat the root with formalin a few days, then fill permanently. In Rigg's disease, after the roots have been thoroughly cleaned, syringe the pockets with dioxide, then with a narrow platinum spatula work a few drops of ten per cent. solution of formalin and elixir vitriol, equal portions, to the bottom of these pockets once a week. In filling teeth, if very sensitive, I place a drop of the forty per cent. solution on a loose pellet of cotton in the cavity, throw on hot-air blast a few minutes, then proceed to cut. I sterilize every cavity after it is prepared by placing in it a pellet of cotton with a drop of ten per cent. formalin while getting ready to fill, or preparing the next cavity. Formalin is easily the most powerful germicide known. It seems to be a special antitoxin for the streptococcus, *and gonococcus.* I use it wherever I find pus and that ends the trouble. I sterilize all dirty mouths before beginning to operate by having the patient rinse thoroughly with a two per cent. solution. I sterilize all implements with a ten per cent. solution and don't want anything simpler or better. I call on you all in your studies in antiseptics to take up some of the points I have given you today on formalin, record your procedures and see if you can attain methods more definite, more scientific.

MALOCCLUSION RESULT OF MISDIRECTED PHYSIOLOGICAL FORCES, CONSEQUENT TO PATHOLOGICAL CONDITIONS OF THE NASAL CAVITY AND PHARYNX.*

BY DR. JOS. T. MEADORS, COLUMBIA, TENN.

Your executive committee has honored me greatly in assigning me the subject of orthodontia. Although you might say an infant specialty, quite a great deal has been done toward classifying cases and systematizing this work, and we have as a result very valuable text-books and books for reference, compilation of methods of various prominent members as Coffin, Goddard, Guilford, Angle, etc.

Confessing limited experience in this specialty, I feel a delicacy in attempting this subject, and hope that should my paper fail to be very instructive, it might be dealt with charitably; and I trust it may be a means of bringing forth a discussion which may be of interest to our members as a body.

Normal eruption of teeth is acquired by nature through certain set rules, and governed by sufficient force from various surrounding tissues, to cause them to be located according to their size, form, and relative position to be best prepared for thorough mastication of food, and to add symmetry and beauty to the face.

Through casual observance one is impressed with the very great percentage of irregularity among our clientele, and in each case, upon noticing the deformity, your natural query is, "Since such the case, what the cause?"

Primary causes of irregularity are not always evident. Whereas it can be due to one simple cause, it is often a result of combine causes, therefore the variety of cases. However, in recent years we have gained sufficient knowledge to be able to classify the various conditions according to their physical arrangement and according to the simple classification of Doctor Angle, I desire to refer you Classes No. 1 and No. 2. I herein quote:

Class 1. Arches in normal mesio-distal relation.

Class 2. Lower arch distal to normal in its relation to upper arch.

Division A. Bilaterally distal, protruding upper incisors; usually mouth breathers.

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*Read before the Tennessee Dental Society, 1903.

Division B. Bilaterally distal, retruding upper incisors; normal breathers.

As has been stated, irregularity may be due to associated conditions of various causes, and in this article I desire to grant the fact that such causes as, too early or too late extraction of temporary teeth, loss of permanent teeth, delayed eruption of permanent teeth, supernumerary teeth, habits, etc., are acknowledged causes of various forms and play their respective parts in all classes inclusive of these to be discussed.

My time will be limited to pathological, nasal and pharyngeal conditions as primary causes of malocclusion, the result of misdirected physiological force.

For the sake of convenience of discussing our subject I desire to subdivide Doctor Angle's Class No. 1 into Division A, "Cases, the result of nasal and pharyngeal disorders," and Division B, "Cases, the result of causes in which no nasal or pharyngeal disorders are evident." We will consider only Division A.

Familiarity with the anatomy of the nasal cavity is essential to a thorough understanding of the causes, of these deformities, and to a certain extent, a familiarity with the diseases common to this cavity. Therefore, the very close relations existing between the two specialties, rhinology and orthodontia, and of our dependance upon a rhinoligist for satisfactory results in attempt to regulate such cases.

It is not my desire to impress you with the belief that it is necessary to diagnose the various nasal disorders, or to attempt treatment of any such conditions, for such is the duty of the rhinologist; however, in the study of your case, it is necessary to understand some certain conditions of this tract in order that you might reap satisfactory results, and when finding your malocclusion the result of pathological conditions of this tract, a consultation with the rhinologist and solicitation of his services are in order.

A thorough understanding of the anatomy, as well as the physiology of the nasal cavity is necessary before any knowledge of abnormal malconditions can be diagnosed.

The bones which form the cavity, their size and location, the membranes which line the cavity, their histology and their physiological functions must be well understood. In Case No. 1, "Arches in normal mesio-distal relation." Division A, "Cases the

result of nasal or pharyngeal disorders." Case No. 2, "Lower arch distal to normal in its relation to upper arch." Division A, and Division B you will find pathological conditions of the nasal or pharyngeal cavities in most cases primary causes of such irregularities.

Inflammation of the nasal tract, no matter what might be the direct cause, should it be of chronic tendency, the length of duration and the subsequent pathological conditions vary greatly the extent of irregularity of the oral cavity.

Should inflammations, such as enlarged tonsils, chronic catarrh, partial or complete obstruction of the nasal cavity, by hypertrophied faucial turbinates, nasal spurs, or septal defections, adenoids, etc., exist, you find by thickened tissues, the accumulation and copious flow of mucus, partial, if not total, destruction to breathing through the nose, a deformity of the dental arch, and disarrangement of the teeth as a result of misdirected physiological forces.

Irregularities of Case No. 1, Section A, are the result of inflammatory and catarrhal conditions of the nasal or pharyngeal cavities and are caused by the repeated efforts upon the part of the patient to swallow. A thickened condition of the post-nasal tissues as result of inflammation, causes the patient to attempt to swallow and in doing so the orbicularis oris is drawn with great force against the anterior portion of the arch and by repeated action, this portion of the arch is retracted; and when the teeth erupt, as a consequence of a diminished arch, the repeated exaggerated force of the lips causes the anterior teeth to assume irregular position in the arch. Such conditions exist when breathing is still performed through the nasal tract, and while, provided no other complications exist, posterior teeth occupy their normal conditions.

Quoting D. Braden Kyle, October, 1900, he herein states: "The respiratory act through the nose, as well as the muscles controlling the nasal orifices, are factors in controlling the size of the nasal cavity." Therefore through any obstruction such as enlarged tonsils, the formation of the nasal cavity is governed in proportion to the extent of the affection. As a consequence of such formation the maxillary arch is irregularly formed as well as disarrangement of the teeth following. Doctor Kyle also states: "This irregular development is largely caused by the re-

peated contraction of the muscles controlling the nasal orifices, necessitated by the forced nasal inspiration and snuffing." He explains that "by the drawing down of the facial muscles, the upper jaw is retracted and the contour of the upper arch is altered. The hard palate then instead of forming a perfect dome, has its anterior portion tilted out and its upper portion, at the base of the nose, drawn in.

"Without this interference the pressure of air within the natural passage counterbalances that on the external surface and normal development takes place."

The condition of enlarged tonsils is noticed between the ages of three and ten years, during the latter part of this period the permanent teeth are assuming their position in the arch.

In Case No. 2, Section A, the conditions here represented are caused primarily to the obstruction of the nasal tract. This may be chronic catarrhal conditions with accumulation of polipi; may be due to adhesions; improperly formed tract; no matter what the cause, the free passage of air through the nostrils is arrested, the patient necessarily becomes a mouth breather. The mouth being always open, there is a constant tension upon the masseter muscles, some fibres of which are attached to the superior borders of the maxillary bone at the region of the malar tuberosity also along the surface of the malar bone, and this force brought to bear upon the maxillary bones, while the mouth is open, forces the maxillary bones downward and inward, producing a decided elevation of the palatal process of each bone, causes the teeth of both sides to assume a position ligual to normal, and the palate to form what is known as a very narrow and high arch. The parted jaws render the orbicularis oris of no service in locating the anterior teeth in the normal position, it being relaxed, excepting at either corner of the mouth, at which point the arch is made narrow, and as a consequence of lack of proper resistance, the incisors occupy, through force from the lower lips and the tongue, a protruded position, forming thereby a deformed mouth characteristic of such conditions.

Class No. 2, Section B., wherein the lower arch occupies a position distal to normal, and retruding upper incisors, I believe is a condition in which the causes are similar to that so stated in regard to Class No. 1, Section A, only the catarrhal condition might be more severe in mucus production; by the frequency in

attempt at swallowing and sucking of the soft palate the muscles of deglutition are brought frequently forcibly into play and thereby cause imperfect developments anteriorly of the inferior maxillary bone. The retruding upper incisors are the result of the unexaggerated contracting force of the orbicularis oris.

STUDIES IN PLASTER AND VULCANITE.*

BY DR. STEWART J. SPENCE, CHATTANOOGA, TENN.

With the conviction that we are here on this historic mount of battle, not to fight our fellow-man with gun and bayonet, but to struggle, or relate our past struggles, with the adverse forces of nature—man's true battlefield—and believing that I have gained some conquest in this line, I stand here feeling somewhat justified in asking your attention.

The particular portion of nature to which I refer as having battled with is plaster of Paris—a product of gypsum, which is an earth of the Tertiary period. Gypsum, when pulverized and kiln-dried at a temperature of about 250° F., takes on the property of setting, or crystallizing, when recombined with water. This is the property which gives it value in the arts, notably that of dentistry. Unfortunately this phenomenon is accompanied by some expansion, which injuries its value to the dentist. Also, its hardness when set is not all that is required in our art.

To the overcoming of these two radical defects of plaster castings—expansion and softness—I set myself over twenty years ago, when practicing in San Francisco. I have continued the battle ever since, testing every receipe I could lay my hands on, consulting plasterers and others, and often burning the midnight oil in my quest of the truth of plaster when my good wife thought I ought to be at home in bed.

RESULTS OF RESEARCH.

As the results of this research I have succeeded in obtaining an impression plaster which sets with only a suspicion of expansion and with the further desirable quality of setting soft; and also in obtaining a model and investment plaster which sets without expansion, and can, by a certain manipulation, be made to assume a hardness which is equal, as regards compressibility,

*Read before the Tennessee State Dental Society, 1903.

to Melotte's metal—from 3 to 8 times harder than plaster of Paris.

This plaster has the further good quality of retaining its hardness during vulcanization much better than does the Paris plaster, insomuch that a model or investment made of it comes out of the vulcanizer about ten-fold harder than does accompanying plaster of Paris.

This quality of hardness is of value because of the fact that a model composed merely of plaster of Paris compresses to some degree when the flask is closed, and the further fact that the steam-softened investment of Paris plaster is too weak to successfully resist the effort of vulcanite to contract while cooling.

The above are my claims. To demonstrate them I gave a clinic this morning. This paper is intended to relate in detail the various acts of said clinic; this method of presenting the subject to you, being, in my judgment, the simplest and best.

REPORT OF CLINIC.

The first acts of the morning clinic referred to the expansion of plaster of Paris in setting. It consisted in filling an upper impression tray with the ordinary dental plaster of Paris—a brand put up especially for dentists by the Newark Lime & Cement Co., of New Jersey. This cast when set was removed from the tray and was then replaced in said tray and attention was called to the fact that the plaster had expanded, as was shown by a space between cast and tray at the posterior border of the palatal portions.

Next, another tray was filled with your essayist's hard-setting palster, which when set showed no such expansion as was exhibited by the previously mentioned cast. It was also palpably harder than the other—this hardness being produced by the method of working the mix, a method which permits of the use of a large quantity of plaster to a comparatively small quantity of water, and which works to the surface the air and water confined in the mix, thus solidifying the mass. In order to give time for this manipulation (which requires about five minutes), the plaster is made to set slowly. When thoroughly worked it is almost as stiff as putty, and in this form is worked into the impression, setting hard about ten minutes later.

WARPAGE OF PLASTER.

The warpage of plaster of Paris—or rather, one of the two

forms of warpage—next come up for examination. There was given a demonstration that when the effort of plaster of Paris to expand is resisted by some body which it cannot force away, it will itself seek relief by bulging outward, so warping. This was exhibited by two long narrow strips of plaster of Paris casting about 12 inches in length run on a board, one of these strips being walled in at each end by cleats—that is, pieces of wood fastened to the face of the board—while the other casting was left free to expand. This latter was seen in its set condition to lie flat on the board, while the former, which had been walled in at its end, and thus was unable to expand laterally, had bowed up at its center, creating a space of about one-fourth inch between board and casting. The value to dentistry of this experiment lies in the fact that a similar upward bulging must occur in upper impressions taken in plaster of Paris, because the buccal flanges of the impression trays must act as restraining walls, so preventing lateral expansion and causing bulging at the palatal dome. This tends to produce in the plate a rocking on the palate. Presumably a similar warpage comes to the model because of the restraining buccal walls of the impression, thus doubling the evil of this warpage.

The remedy for this evil is, to use for impression—taking some non-expanding material—either wax, modeling compound, gutta-percha, or a non-expanding plaster.

For the soft mouth probably the three first named are to be preferred, because of their contraction; but for the harsh mouth, I think the plaster is indicated. Your essayist exhibited the contraction of wax and two kinds of modeling compound by showing samples of the three which had been heated and pressed into the lid of one of the metal boxes which came to us containing vulcanite rubber. It was seen that one of the kinds of modelling compound—one lately put on the market—has a very large contraction—about one-sixteenth inch in six inches. The other was shrunken but about half this much, and the wax still less. But of course different waxes give different contractions; that exhibited was, I think, largely adulterated with tallow. Those adulterated with paraffin have larger contraction, and the pure paraffin itself shrinks about one-sixteenth inch in six inches. It is my opinion that an impression material having a moderate contraction will give better results, with all except the hard mouths, than even an unexpanding plaster.

EXPANSION OF PLASTER.

The expansion of plaster was next shown by another method. There was used an instrument which was made by your essayist for the purpose of measuring with exactitude the expansion of plaster. This is the scissors-like tool which I now hold up before you. The testing was thus made: Some plaster of Paris was mixed and poured on a board and the short end of this instrument was sunk into the yet soft casting, in a way which left the longer end free to open as the plaster expanded. The shorter end opens about three inches.

First, dental plaster was tested, some being poured on the board, the expanders set in it and the position of the points of the longer end marked on some paper which had been glued down to the board. As the plaster expanded, these points were seen to move outward, until they had traveled about two mm. This distance, however, had to be divided by eight to give the expansion of the three inches of plaster, the longer end of the instrument being eight times longer than the short end.

Next, these expanders were similarly used to test the expansion of the impression plaster concocted by your essayist, and it was found to be nil.

Thirdly, this instrument was in like manner applied to my hard-setting plaster, showing it to be similarly non-expansive.

The foregoing exhibitions ended the subject of the expansion of plaster, which occurs during crystallization. There is a slight expansion which proceeds slowly for about twenty-four hours after crystallization, but it is so small that it may almost be ignored. But not so with a *third* expansion—one that takes place during vulcanization, and one which your essayist deems as injurious to the adaptation of vulcanite plaster as is that of crystallization. It would have been impossible to give a clinical demonstration of this vulcanization-expansion without using a vulcanizer, and this, I thought, would consume too much valuable time; but any dentist can easily demonstrate it to himself by running through the vulcanizer a casting moulded in an upper impression tray and observing how the swollen cast refuses to return to place in the tray. Indeed I have saved you the trouble of so doing by preparing such a cast myself, which was exhibited during the clinic, together with another tray-cast composed of my hard-setting plaster which latter showed no expansion. The

swollen cast was also compared with a plaster of Paris tray-cast which had undergoen only the expansion incident to crystallization—showing increased swelling in the case of the steam-heated cast.

Having thus examined into the expansion of Paris plaster, we next took up the subject of its

INSUFFICIENT HARDNESS.

I regret that time did not permit of my conducting a certain experiment exhibiting this large compressibility of plaster of Paris. I had to be content with exhibiting the old casts of such a test made a year or so ago. In that test the Paris plaster was poured into the lower half of a vulcanizing flask, filling it fully and evenly, and then the same material was poured into the other half. After four hours this flask was opened, sixteen grains of red rubber was placed in it, it was immersed as usual in boiling water, and then screwed together. On being reopened the plaster in one of the halves of the flask was removed, and sawed asunder so that when put back to place a space was seen between the plasters of about a half millimeter, made by their being compressed by the rubber.

It may be a surprise to some of you to hear that so soft a thing as vulcanite rubber, heated to about 190° F. by immersion for ten minutes in boiling water, can compress a substance so apparently solid as crystallized plaster of Paris. And yet, Doctor, remember that in closing a flask you use nearly all the strength of your wrist applied consecutively to three screws, each of which is a modification of that mighty mechanical force, the inclined plane—and you need not wonder that the model is compressd. But why is so much power needed in flask-closing? Because you have the rubber where it cannot readily get away—in a corner, so to speak. You know there are things, wild-cats, for instance —which will glide away from you peacefully if they can, but when you get them cornered, lookout! So with rubber. You have it down in a hole, into which you are unmercifully crowding it, and the result is that it compresses and so hardens under your pressure, and thus hardened it compresses the plaster model.

In order to exhibit the strength—that is, the resistance to compression—of my plaster as against that of plaster of Paris, I showed during the clinic a flask which had been prepared a day or two before, into one-half of which had been run Paris

plaster, and into the other, mine. At the clinic a steel ball was placed between the two plasters and then the halves were brought together by the screws. When the flask was opened it was seen that the depression made by the steel ball in the plaster of Paris was four-fold greater than that made in Spence's plaster—thus demonstrating the superior hardness of the latter.

To further exhibit this hardness, the flask had been prepared so that an ingot of Melotte's metal was imbedded in the plaster of Paris half, its surface facing that of the hard plaster. The steel ball was now placed between these two surfaces and the flask was again closed, with the result that the depression made in the metal was almost as great as that made in the plaster.

This does not mean that the substance in question is as hard as Melotte's metal in all respects, but only in that of compressibility, which is the feature which most interests the dentist.

It is to the ingenuity of our friend, Dr. A. B. Cook, that I owe the idea of using this hard plaster in swaging aluminum in the Parker shot-swaging device. I did not own one of these instruments, and had never thought of them in connection with my material until Doctor Cook suggested the idea and kindly loaned me his instrument. In my first attempt the die broke so badly that I was for abandoning the effort, but he encouraged me to persevere, and pointed out that though the die was broken it was not crushed, not compressed. At least, not perceptibly so, and I soon found that even when cracked into several pieces a die can nevertheless successfully swage a plate, or at least can so nearly do so that a few blows with a new die will complete the work. Indeed, I am not sure that the new die is needed at all. In the clinic of this morning I exhibited a plate and the broken die on which it was swaged, the latter showing no compression.

PREVENTIVE OF DARK JOINTS.

Those of us who were in dentistry twenty years ago, when the sectional porcelain gum denture was so common, remember with what gruesome gaze we beheld the dark joints in our plates as they came out of the vulcanizer, and how we eagerly read all of the sure and certain cures for this defect; and they were many. I got out one myself. Now I find that this hard-setting plaster of mine is a veritable preventive of dark joints, because it does not permit the opening of the joints by the spreading apart of the

blocks through their being forced into the soft plaster of the investment in the act of flask-closing. If the blocks are badly ground they will of course let in rubber, but this may be prevented by filling them with oxyphosphate of zinc *before* flasking. For this purpose I remove two blocks from the wax, one on each side of the denture, thus exposing five joints.

And now let me hurriedly pass on to draw your attention to a fact of importance which has been largely overlooked by our profession—to-wit, the

CONTRACTION OF VULCANITE.

In this morning's clinic a strip of vulcanite which had been vulcanized a few days ago in a little metal box was removed from said box. That it had not perceptibly contracted was due to the fact that extruding portions had caught in the wire which bound on the lid, and this had checked shrinkage. But now these extruding portions were filed away and it was subjected to a bath in water heated to 145° F., after which it showed a slight but quite perceptible shrinkage.

Three old plates were then exhibited, each showing contraction. These were made many years ago, and presumably had retained their original forms until subjected to hot water about a year since. Before the heat was applied to them, and in order to have a record of their original forms, each of these plates had been filled with some of my non-expanding plaster, thus making models of their palatal portions. After the submersion of the plates in hot water, these plaster models, on being replaced, showed the changes that had taken place in these plates. This was exhibited in the clinic. One of them had shrunk three mm. from heel to heel, and the space made at the palatal dome would admit the edge of a 25c piece—nearly one and a half millimeters.

Another old plate, which had not been previously shrunk, except to some extent when the teeth were taken off it, was removed from a cast and heated in water at a temperature of 140° F., when it also changed shape slightly.

In two of these plates there was seen to be warpage as well as contraction. That is, it was observed that on being returned to their models there was more space along one ridge than the other. Dr. G. B. Snow attributes this phenomenon to porcelain gums, claiming that their refusal to contract with the vulcanite warps the latter; but I am disposed to attribute it rather to the

plaster investment holding the teeth more firmly on one side of the plate than on the other, allowing the looser end to contract most; for I have seen it occur in other than porcelain gum dentures. I have tested this matter both with invested and non-invested plates.

In view of this fact that vulcanite contracts in cooling, I have striven to obtain a plaster which will so far retain its original hardness as to prevent this contraction by rigidity of the investment. A record of my experiments on plates along this line may be found in the *Items of Interest* for June of this year. An exhibition of the softness of plaster of Paris after vulcanization as contrasted with the strength of my plaster, was given in the clinic this morning, when a flask, which contained one of these plasters in one of its halves and the other in the other half, both of which together had been put through the vulcanizer for one hour at 320° F. the previous day, was opened and then closed again on a steel ball, exhibiting that the ball sank almost out of sight in the Paris plaster, making scarcely a dent in that of your essayist.

Of course no investment can control more than the *linear* contraction of vulcanite. Then what about the *vertical?* We know that some rubber plates are almost an inch thick. Now, as the uncontrolled contraction of an inch of vulcanite is about one mm., there is enough shrinkage here to spoil the fit. Well, I have no complete cure for this evil, but I fill in these thick places in plates with weighted rubber, which has but a little over half the contraction of the other rubbers, and I use the long-root tooth made for continuous gum work.

Lower plates are usually thicker than upper ones, and contraction is undoubtedly greater with these thick plates, because of their greater power to overcome the feeble resistance of a plaster of Paris investment. They contract from each end toward the region of the central incisors. A simple and efficient way to prevent this shrinkage of lower plates is to embed in the rubber a horseshoe-shaped metallic bar, thoroughly serrated. This also adds strength. Except for this matter of strengthening the plate, I do not think it would be needed if my plaster were used for investing, but where not, it would certainly prevent contraction of the plate in cooling, and so might possibly aid in its adaptation to the ridge.

You observe, gentlemen, that I say "possibly;" for, however paradoxical it may seem—it is due to the fact that plaster of Paris investments permit contraction of vulcanite plates that said plates ever fit at all. They have been moulded on a trebly-expanded plaster of Paris model, and the shrinkage of vulcanite counteracts to some extent these expansions. Perhaps the very fact that investments are generally used while green, and thus become very soft during vulcanization and so permit a large contraction of the plate is that which saves many a plate from being a total misfit.

MISFIT PLATES.

Most misfits are, I think, due to plates being over-large rather than too small. This is because the combined expansions of the plaster are greater than the contraction of the vulcanite. If a plate is much too small it will scarcely adhere to the mouth at all, especially so at first; but when it is over-large it often has, even when first inserted, a certain good suction due to its pressing hard on the softer portions of the palate. This promises well to the deceived dentist, because it resists a downward pull, and he hopes it will tighten yet more. But alas! the patient comes back in a few days with a sore palate and complains that the plate comes loose in eating. The best fitting plates, no doubt, are those which are a trifle too small at first; which get their suction in from fifteen to thirty minutes after insertion, and then have a steady, solid feel to them when pressed by the fingers.

I have good reason to believe that over-large plates can be equally contracted by immersion for a minute in warm water, beginning at 130° F., and proceeding by steps to 140, 150 and 160° trying in the mouth at each step until a good fit is obtained.

We all know by sad experience how heart-sickening it is to insert a plate which will not stay up. Your essayist was wont, in previous years, to put them in with fear and trembling. After one has spent about two days in making a plate very nice and is full of hope that it will stick as tight to the membrane as grim sin to a grass-widow, and that the dollars will soon be sending forth their musical jingle as they change owners, then to find that it persists in dropping down, or that the slightest touch knocks it loose, makes an uncomfortable sensation of warmth crawl all over you. You press that denture up again hard and tight, as

though you intended to force the mouth to fit the plate; but when you remove your hand, or soon after, down it comes again! Perhaps you don't *say* much, but you silently vow that the next plate you make you'll do something—you'll put in a chamber deep and wide, enough to lay a dollar in—never mind its eventually filling up with inflamed membrane—and you'll draw a tall, sharp bead all around the margin of this chamber—never mind about the suffering membrane—or else you'll surround the whole plate with a similar heavy bead, and then draw another just outside the suction chamber, or maybe you will fringe the edges of your plate with nice soft velum rubber—never mind its spoiling in a few years—or perhaps you'll cover the entire palatal surface of the plate with this nice soft oil-absorbing rubber, or—happy thought!—you'll go back to the long abandoned Scott's soft rubber suction discs; or some other foolishness. Indeed, when you have to face the fact that you must patiently go to work and make that plate over again—now perhaps for the third time—your mind is in a condition for doing foolish things, even to going round the corner and taking consolation in a little of the liquid excretion of the yeast plant. And Mr. President, the most foolish thing a man can do is to drown the God within him—his reason, in the excrement of a microbe!

Mr. President and gentlemen, in thanking you for your courteous attention, I congratulate you on the fact that this long paper has now come to a close.

STERILIZATION AND ASEPSIS IN THE PRACTICE OF DENTAL SURGERY.*

BY DR. R. BOYD BOGLE, NASHVILLE, TENN.

No discovery has ever revolutionized the practice of medicine and surgery in all of its branches more than the discovery of antisepsis and its values.

The applications and principles, so exact and scientific in its results, so beneficial and ofttimes marvelous, that it may be distinctively classed the greatest discovery that has crowned the efforts of those who serve and minister to the sufferings of mankind. And yet how many dental surgeons overlook the value of

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asepsis and necessity of proper sterilization? How many wonder at their cases of infection—are puzzled to know their origin and yet fail to have thorough cleanliness and sterilization or give it a proper consideration.

The dental surgeon who fails to appreciate the possibilities of infection from the scaler, the bistoury, extracting forceps, the lance, or the hypodermic needle, fails also in appreciating the horrors attending infection by contamination and introduction of disease through this medium.

For instance—there may be no lesion in the mouth, no local or general symptoms indicating the presence of syphilis in the case under medical treatment, these symptoms being abated and relieved by the local manifestations in the mouth. Yet the possibilities of infection from the blood at this stage is certainly possible.

Granting that the tendency to infection in the mouth is small, still, as a precaution, should we as dental surgeons fail to appreciate the magnitude of such a crime and should we be guilty of neglecting even to a degree, of absolute thoroughness, the principles guiding us to a thorough sterilization of our surgical instruments?

How many surgeons would hear the daily tolling of the church bell proclaiming to them a death as a result of improper surgical cleanliness and asepsis, and how many operations of laparotomy, which in themselves by virtue of proper sterilization and the use of proper antiseptic precautions are free from danger, would be fatal?

In the practice of dentistry, a specialty of general surgery, the same general outline should be followed. Before the bistoury or lance are used they should be thoroughly sterilized; after use they should be cleansed mechanically and again sterilized before being put to their accustomed places.

The forceps should be cleansed the same way, being placed in antiseptic solution prior to being used.

The rubber-dam clamps are also to be carefully sterilized for they come in contact with gum tissues, often wounding it by virtue of having to go deep down in the tooth in case of great loss of tooth structure.

The hypodermic needle should receive exceptionally good attention, for in its use greater liability is incurred since it forces or carries into the deeper structure any contamination. The sterili-

zation of broaches is perhaps by some overlooked and is responsible in many cases no doubt for apical infection after indications have already pointed to an antiseptic condition of the canal.

For the sterilization of instruments perhaps the most economical is the use of boiling water with a bit of carbonate of soda, to prevent oxidation. A 5 per cent. solution of lysol is found to be very efficacious—having antiseptic properties greater than carbolic acid and devoid of the poisonous properties. It is made from the most active principle of the phenol of the carbolic acid.

RIGG'S DISEASE.*

BY HOWARD J. STEWART, D. D. S., MEMPHIS, TENN.

When Doctor Peirce, several years ago, advanced the uric acid theory and asserted that very marked improvement was obtained by administering tartar-lithine as a uric acid solvent, I began to test it and found that in many instances much good was to be derived from this drug. This seemed in a measure to prove Doctor Peirce's theory, but the results were not constant. The thought suggested itself that the results might not be due altogether to the fact that it might render the blood alkaline, but to its general eliminating effect. With this idea in mind I began to administer other medicines watching the results closely. Being convinced that the good effects of tartar-lithine was due largely to its elimination of waste material and poisonous substances by the stimulation of the excretory organs, I began to consider if other eliminants would not act favorably and may be, produce good results where the tartar-lithine had failed. I became convinced that thorough and active elimination was absolutely essential and that in the beginning, whatever drugs would be of service must be eliminants.

Colchicine has proven exceedingly efficacious in some cases, and of no value whatever in others. The action of this medicine is very imperfectly understood. It seems to act most favorably in plethoric cases. You are all familiar with its effect on the gouty diathesis.

Whenever it is indicated for gouty troubles generally (and it is indicated very much oftener than we are usually inclined to

*Read before the Tennessee State Dental Society, 1903.

believe) it acts well on the tissues about the teeth, often lessening the acute symptoms of Rigg's disease with magical quickness. The effect of colchicine is enhanced usually by preceding it with calomel, a combination of calomel, podophyllin and soda, one-sixth grain each is given hourly until effect is produced. This is then followed by the colchicine or its combinations. Colchicine when given alone is usually administered in globules of one-thirty-fourth of a grain, one every two hours for several weeks unless severe griping or general derangements of the alimentary canal appears. A valuable combination, especially in gouty rheumatic cases, is colchicine with methyl salycilate.

In rheumatic cases Doctor Garretson's combination of potassium iodide and tincture of colchicum root has proven of service.

In some cases the best results are obtained by giving the colchicine and tartar-lithine alternately, but more often I administer both at the same time.

Colchicine and hydrochloric acid oftentimes act happily. Sometimes, too, most excellent results are obtained from hydrochloric acid and hot water.

In fact this is becoming to be a favorite way of beginning the elimination. In most cases the hot water can be used to advantage, especially in the commencement of the treatment. It is of more value as an all-around eliminant than any one drug.

I have found that the action of any drug or drugs is far more satisfactory in every case where hot water is copiously used; and if the patient can be induced to take regular exercise to the point of profuse perspiration the difficulty of getting a favorable systemic condition is greatly lessened and the chances for immediate local results are greatly enhanced. As you are all aware, though, this is the most difficult thing with which we have to contend. People will drug themselves from morning till night to allay symptoms, but they will not take exercise to get themselves in a healthy condition. We, as dentists, are in a poor condition to give such advice. Patients will frequently say, "Why do you not stay out of doors and take vigorous exercise two hours every day yourself?" We answer that our business is such that we cannot possibly spare the time, and the patient replies, "Neither can I."

This is the bane of American life. Certainly "It were easier to teach twenty what were good to be done than to be one of the twenty to follow mine own teaching."

And here I want to utter a word of warning against the suicidal way in which ninety-nine out of every one hundred busy dentists carry on their practices and neglect their physical health. They go to their offices early and leave them late. All day they stand in a strained, stooped position, breathing contaminated air and undergoing a continuous nervous strain that, when carried on year by year without proper exercise and systematic rest, gradually undermines the health and fills early graves.

The best statistics on mortality that we can gather is enough to give pause to any thoughtful man, and when we stop to consider that these statistics include all the dentists, nine-tenths of whom are not very busy, then it is enough to simply appal the really busy man. When the strain of the day is over we are too tired to exercise, so we rest and recuperate during the night just enough to be able to stand up under the next day's strain. This goes on day after day, year after year, until the strongest machinery gets out of order and finally breaks down. I believe every busy dentist should make it an iron-clad rule to leave his office by four o'clock every day and stay out of doors at least two hours. It is hard to do, but in the end it will pay.

I know of no name strong enough for the man who works all day, into the night and then works on Sundays.

But to return to the eliminants. The object of the systemic treatment is first to flush the system and free it as nearly as possible from retained waste material to give the tissues about the teeth a chance.

One of the most difficult things which confronts us in this question of elimination is the attempt to keep open the bowels. This is important. We cannot secure perfect elimination unless the bowels are doing their work well. It is absolutely essential to keep them in good working order during the entire treatment, and it is desirable at first usually to keep them open freely for several weeks. It is difficult to do this without having constipation follow when the medicine is discontinued.

I have derived much satisfaction from the use of Doctor Garretson's favorite remedy for constipation:

Tinctuae nucis vomicae.....ʒj
Podophyllinni.....gr j ss
Sig. 5 drops before meals.

This seems especially useful in neurasthenic cases. The combination of tartar-lithine with sulphur acts especially well

sometimes. Whatever the condition of the patient—where constipation exists it *must* be corrected at least for a while before we can secure the best results. It is also important that the kidneys be freely flushed with an abundance of water.

In cases of anemia and a generally lowered and weakened condition of the system, nux vomica and iron are indicated. We find this condition most frequently in women. It is nearly always accompanied by constipation which seems to be due to simply the weakened condition of the sysetm.

Nux vomica stimulates the contractile strength of the muscular coat of the intestine and tones up the whole system, increasing the digestion and stimulating the nervous system. Constipation is often corrected by this alone, but more frequently it is advisable to combine it with iron or podophyllin. A pill of one-eighth grain extract of nux vomica and one-half grain ferrous sulphate given three times a day sometimes has a very happy effect in overcoming habitual constipation, and invigorating the whole system. The hydrochloric acid in addition to the above is nearly always indicated in these cases. It is especially indicated where there is torpidity of the liver and consequent indigestion.

The action of this medicine in Riggs' disease is peculiar. My experience goes to show that there are few cases in which it cannot be administered with advantage at some time during the treatment. Given continuously it seems to lessen the amount of calcific material in the system.

This renders it of particular service in old age patients where there is undue retention of calcific matter.

Dr. George Clements advanced as his theory of the cause of Riggs' disease, the idea that (as the microscope plainly shows) in each and every case the cementum of the tooth has become hypercalcified, thus shutting off vital union between the tooth and the organism at large because of the encroachment of the calcific matter on the ligaments of the pericementum. This, of course, shuts off the blood supply.

The membrane being able no longer to perform its function dies at this point. This would especially apply as the patient approached old age when the calcific material in the system is in excess.

Experiment shows that the dilute acid sprinkled continuously on the food of pigs and calves so affects the bones as to make them unable to properly support the weight of their bodies; and

so it would seem that given regularly to the human being it would stimulate the excretion of calcific matter and prevent the proper calcification of the cementum.

The direct application of the acid to the cementum acts locally on the same principle, dissolving out the partially calcified material in the external layer of the cementum, where Doctor Clements has shown the extra deposit is almost exclusively confined This gives the peridental membrane a chance to re-establish a vigorous union with the cementum.

This is the only way we can explain why the acids applied locally will often do the work that other drugs equally stimulating and germicidal will not.

Men in operating in pockets often inadvertently expose the edge of the process and the acid used afterward coming in contact with this edge stimulates this carious bone and aids in the effect.

The operation which I gave the profession several years ago is the only practical and effective way to reach this bone either with the acid or with instruments. Instead of spending all our time feeling around in pockets trying to find deposits we simply anesthetize the gum so there is no feeling in it. Separate it entirely from the tooth all the way round and up to the process, then when we have free access the work is done quickly and vigorously, removing necrosed alveolar edges and the deposits at the same time—probably also some of the external layer of the cementum. Then it is an easy matter to pack up against the process for a few minutes cotton saturated with the acid. This is removed, pockets allowed to close and you are done. However, this is easier said than done and the nicest judgment must be used in every particular.

I remember I was asked to clinic before an association. Tooth selected was a superior bicuspid. On separating the gum from the tooth I found the alvealor bone absorbed on the buccal side almost to apex. I explained to the patient that ordinarily I would first take out the pulp and cut off crown of tooth and then operate. That she must go immediately after the operation and have the nerve removed. She promised to do this. She was assistant to a prominent dentist and knew all about what that meant. She failed to do this, and the removal of the necrosed bone so close to the pulp where it enters the foramen set up a violent inflammation which finally resulted in the death of the pulp. She wrote to me

of her pain and I was utterly unable to account for it, as I supposed all the while that the pulp had been removed. She even threatened me with suit for malpractice. I simply speak of this to show that the operation must not be done indiscriminately. When I first began to operate in this manner I had so much success that for a long time I depended on local treatment only, but I find myself resorting more and more all the time to systemic treatment as an indispensable aid in securing results. It is wonderful how much better results can be obtained when this is intelligently done.

My experience in attempting to work with the family physician in these cases has not been generally satisfactory. As a rule he does not readily understand or sympathize with the idea of giving medicine to an apparently healthy man and if he administers it he usually does so with reluctance. This does not tend to encourage the patient, and if the patient loses faith and begins to relax effort we are lost. However, in many cases it is absolutely essential to have the co-operation of the physician.

The man who insists that Riggs' disease is purely a local trouble and depends on local treatment only *may get some* good results, but he so handicaps himself even in these cases that the best results are not obtained, and he fails absolutely in very many cases where, combined with intelligent systemic treatment, the disease would yield and the teeth be saved.

Only recently a case where modular rheumatism was present resisted all local treatment until potassium iodide was administered, when it then yielded readily.

When a patient is full of malaria there is no use trying to manage his Riggs' disease until he gets thoroughly acquainted with such medicines as calomel, iron, quinine, strychnine, arsenic, etc. But the hardest thing we have to deal with is nervous troubles. When I come to this I feel like setting down and giving someone else a chance to talk.

Now just a few words in regard to appliances:

The value of regulating appliances in some cases can hardly be overestimated, not only to give proper occlusion but also to produce a change of tissue about the tooth moving through the bone. Doctor Case called my attention to this several years ago, but it is only of late that I begin to fully appreciate the value of the suggestion. Fixed appliances only are to be used. Bridge work is still more to be valued. When the alveolar wall is great-

ly absorbed about a tooth even though we eradicate the disease, the leverage on the supporting bone by a tooth standing alone is so great that it can do no permanent good. These teeth should be cut off and crowned and joined together without hesitation. It is wonderful to what an extent the bridge-work can be carried in these cases when we can arrange it so as to bring the stress of mastication straight down on these teeth, the bridge being so constructed as to prevent any lateral movements.

To attain success in the treatment of Riggs' disease, there are so many things to do, and different cases have to be treated by such widely different methods that it is hard to include in a paper enough of any one thing to be satisfactory. It is necessary often to excise the entire crown of the tooth to give the root perfect rest and to confine the vitality to that root.

It is essential, also, to be able to treat the tooth from within as well as from without. Leaving sulphuric or hydrochloric acid in the canal in contact with the tissue at the apical space is sometimes very advantageous to stimulate the tissues where they cannot be reached from the outside. Bringing the tooth to a high temperature by a continuous blast of hot air will sometimes stimulate these sluggish tissues to renewed activity. Operating in desperate cases on one side of a tooth at a time, allowing this to heal, then operating on the other is to be mentioned.

Before any operation whatever is done the mouth should be put in as clean and healthy a condition as possible, and constant friction and stimulation of the parts involved are to be kept up after the healing takes place.

I know of nothing more complicated than the numerous methods to be resorted to in the successful management of this disease, and I believe it is impossible for any man to master it and carry on a heavy general practice at the same time.

I have labored and studied and brooded over this disease until my friends have thought seriously of having me locked up before the dangerous period arrived. I have received very little encouragement at any time from the profession in general. I have had the encouragement of only a few who are intimately acquainted with what has been done and actually *know* the results that have been obtained. Do not understand me as being averse to honest and thoughtful criticism, but I am tired of having ignorant egotism dismiss the subject with an "Oh, pshaw, there is nothing to it," or by stating that he has tried my method and *every*

other method and has not succeeded, and that consequently the disease cannot be cured. I want to go on record with this statement, that in the past five years I have not undertaken a single case of Riggs' disease that I have not successfully managed and afterward *kept* under control where the patient followed instructions, *except* where some uncontrolable systemic disturbance existed.

FIFTEEN YEARS OF PROGRESS IN DENTISTRY.*

BY DR. ED. M. KETTIG, LOUISVILLE, KY.

Fifteen is about the number of years I have enjoyed being a dentist, and the impression I received when I first entered a dental office fifteen years ago, to take up my chosen calling, and the impressions that can be conveyed to one entering upon the work today constitute what I have selected to write about.

In those days, the site for an office was usually some residence where the dentist made both his place of abode and practiced his profession. I am speaking, of course, of larger cities, such as good old Louisville, and other cities of similar size. Today things have undergone some changes and we find the dentist, like other professions and callings, seeking a high office building, or designing a building of his own for his own especial needs, on a strictly business basis, away from the residence portion of town, where he can enjoy the luxuries of office hours; lock up his business cares and responsibilities after a certain time in his office and leave for home to enjoy social comforts in his family circle.

AN UP-TO-DATE OFFICE.

Much greater care and attention is given today than formerly to the arrangement of rooms—floors—windows—walls, etc. An up-to-date office of today should consist of reception-rooms, operating-room, examining-room, dressing-room, laboratory, private office, or consulting-room, and if much extracting is done, a room especially fitted out for that. A busy dentist of today finds it hard to get along with one chair. It is often embarrassing to ask a patient, with whom you have a long engagement, to step out of a chair for even a few minutes to treat some tooth, or examine for an appointment. This should all be done

*Read before the Tennessee State Dental Society, 1903.

in a room to itself, and the operating-room should remain for the sole possession of the patient with whom the appointment has been made, not to be disturbed by any one nosing about, for our patients are entitled to privacy in their work and we ought to see that they have it, and enjoy it.

Another great addition to a modern dental office is a dressing-room, strictly private, where a lady patient can lay her hat, wrap and pocket-book; a room equipped with a wash-stand, hot and cold water, mirror and toilet articles; also lavatory.

Unless you have all these appointments you have no conception of how much your patients use and enjoy them. How they will praise your thoughtfulness for their general comfort, and after all, the most successful practitioner of today will be found paying great attention to the personal comfort of his patients.

Upon entering a modern office of today, one should note that the reception-room, or rooms, have been arranged and appointed with care as to hardwood floors, suitable office furniture and pictures, all selected with a view toward hygienic condition, as many people are supposed to pass in and out of such a room in the course of a year. Upon entering the operating-room, one should be at once struck with the general hygiene. Tiled floors (preferably snow-white), enameled walls and ceiling, plenty of light from large windows, everything spotless and clean. There should not be anything in this room except necessary furniture and appliances. If we will pattern after the operating-rooms of our large infirmaries, where everything is absolutely hygienic, and nothing superfluous standing around, we will have the correct thing.

A good dental chair, a late pattern, fountain cuspidor, an operating-cabinet supplied with everything necessary for work, a dental engine, a bracket-table, about completes this most necessary department of a well-fitted dental office. An operating-room of a dentist is his "sanctum sanctorum." It is the place above all others which should be at all times in the highest condition of order and immaculately clean. This is today rendered more possible than formerly, by the manufacture of beautiful and practical cabinets, dental chairs of the latest pattern, fountain cuspidors that are beautiful and serviceable, electric fans, engines, annealers, sterilizers, etc. Too much stress cannot be laid on the general fitting out of an operating-room, for it is the

place where the dentist spends the most of his life, and everything in it should be placed with a view to facilitating and aiding him in his work.

Passing from here into the next room we have a place where examinations and appointments are made with patients. This room should be equipped with all necessary medicines and appliances for treating teeth; taking impressions and occasional extraction. This room should be similarly appointed to the operating-room, and just as clean. They should both be only large enough to accommodate the necessary equipment for doing business and no more, as large rooms are not only harder to keep clean, but cannot be made to answer the purposes as well. Patients coming into the examining-room are only supposed to stay for a few minutes, and should not intrude upon the privacy of your patient in the operating-room. It is unjust to make a patient who has come for a treatment, or to make an appointment, wait an hour for you to finish with a patient whom you have in the operating-room. All my patients are willing to excuse me for a few minutes on such occasions so as to let some one go who has no appointed time.

Passing from here into the laboratory, we should find as much attention paid to appointments, equipments and cleanliness as anywhere else, and there is no excuse in the world for a dentist to keep his laboratory dirty, and stand in an apologetic attitude toward his patients if they should, by accident, pry into this branch of his business. Your laboratory should, at all times, be presentable enough for any lady to inspect, and it is always possible, no matter how busy you are. But it seems to be the rule to allow it to remain untidy, simply because it is not often seen. Every spot in a dentist's office should be equally clean.

The beautiful electric lathes of today make work in the laboratory enjoyable to what it was a few years ago. Think of the splendid cabinets, soldering outfit, improved metals and solders, modeling materials, that have been greatly improved recently. Who would think, in these modern days, of using anything but an anatomical articulator for mounting artificial teeth? It will be a long time before that most perfect instrument, the Kerr anatomical articulator, will be improved. It is almost the acme of perfection. Of course, we must give credit of all anatomical articulators to the efforts of one man, and that was Doc-

tor Bonwill, who first called attention to the many and important movements of the jaw and tried to reproduce them in such a machine such as his articulator. To him is due the credit of all the science and study in connection with the mandible. But to some other clever men is due the perfecting of a machine that will, in all particulars, imitate the jaws, and in my opinion, the Kerr articulator comes nearer than any other that I know of. I cannot dwell long on all that I would like to call your attention to, as having been greatly improved in the last fifteen years, but in our laboratory, the character of our work has somewhat changed.

CHARACTER OF WORK CHANGED.

We do not do so much plate-work; it has drifted to crowns and bridges, both porcelain and gold, and here again those beautiful electric furnaces must at least be mentioned.

Think of the inlays that are made in gold and porcelain, and the drifting of methods in this particular, especially the porcelain era, which has now fairly dawned upon us. Passing back into the operating-room, let us pause for a moment to think of the materials and methods of preserving the natural organs. The wonderful electric engine makes it possible to do most anything quickly and with precision. Engine-burs are made mathematically true, and so cheap you can afford to throw them away after each operation.

I will just remind some of our older friends in the profession of what engine-burs cost some years ago. Where now good burs can be bought for less than $10 per gross, they formerly cost $4 and $5 per dozen. Gold for filling teeth has been much improved; amalgam also, and much attention has been paid to cements. An up-to-date dentist should have a variety of colors of cements on hand; at least six or eight, and use the kind nearest in color to the tooth he is filling. Treatments of teeth are much changed. Putrescent pulps are quicker removed, and the teeth restored to health by the new disinfectants, deodorants and healing agents that we have. I might mention one agent that has recently come into our midst, and promises some wonderful results. It is bromo-chlorone, and in my hands has been a wonderful remedy in successfully disinfecting, in fact destroying, at once all putrifactive decompositions, rendering at once inert anything of a pathologic nature. It has no effect on living tissue, and can be used freely in the mouth.

After devitalization, practice of today has changed to what it was a few years ago. I, for one, think it a great loss of time to remove a pulp that has been devitalized. To use mummifying paste is good enough for me. Now I expect to be criticized for making such a statement, but I have had too much success in the last few years with mummifying nerves to ever go back on it, and if some of you want to still putter around getting a devitalized nerve out of a tooth with a hyenish little barbed instrument like a fishing-hook, why, go ahead and do it. I cannot imagine a way of losing more good time, religion and energy than to try to get the nerves out of molars and bicuspids, especially when the cavities are approximal, and you must necessarily destroy much of the sound part of the tooth to get at the cavity, and then work up into some tortuous-winding canal to end in either failure to extract the nerve or improperly fill the root canals. Make the nerve act as your filling material, and don't enlarge the proximal cavity, and you will not only rejoice, but your patients will heap their blessings upon you, especially if they have had the operation performed each way.

I must beg your pardon, though, for this paper is getting too long, so I must refrain from mentioning many other things that have changed in the last few years. Pyorrhea is much better understood, and its treatment is more successful now than a few years ago. Single teeth affected by pyorrhea, are more positively and quickly treated by extracting, then surgically treated and replanted, which procedure is more practiced now than formerly. In reviewing the whole field of dentistry in the last few years, we will say it is keeping well abreast in progress with other professions and arts, and marching close to the "band wagon" in the general advancement of the sciences.

The colleges have much to do with this state of affairs, by the general stand for higher and better education. It has served to put men in the field who are capable of thinking for themselves; men who are leaving behind "Doc. Mossback" and "Doc. Stick-in-the-Mud;" "Drs. Puffy" and "Hotty" and "Measley" will all have to take a back seat in this onward march of civilization, and give way to "Doc. Hustle" and other men of training and high education.

Again, if you allow the cobwebs to gather in your office, the dust on your furniture, and your general appointments in

your office to become shop-worn and dingy, your business will slip from you, and the fellow with the up-to-date office and methods will be smoking 25 cent cigars, while you will indulge in a pipe, and perhaps a dream of that.

PRESIDENT'S ADDRESS.*

BY DR. W. K. SLATER, KNOXVILLE, TENN.

In accordance with the time-honored custom of this society, it becomes my duty to speak to you on topics of interest to the profession at large and beneficial to the society in particular. Having, it is to be hoped, a full appreciation of the importance of the undertaking.

Everyone similarly situated tries to think of something new that would be for the good of the association, and I am no exception to the rule. And those who have had anything to do with getting up the program for a meeting of this character know something of the difficulties and unsatisfactory methods generally pursued. This has been and can be done by writing, but never with any degree of satisfaction to "The man with the hoe." There surely can be some way devised whereby, not the same, but more satisfactory results may be had. Therefore, I wish to submit to you a plan that I think will in a degree help those who come after out of some of the difficulties heretofore encountered. The suggestion in brief is this: That we make it a special order of business for the society to elect an Essay Committee, similar to the Executive Committee, whose duty it shall be to confer some time during the meeting of the association and select subjects and essayists, also parties to open the discussions, for the next meeting.

After the selection of such subjects as in their judgment will be of most interest to the society, then men to fit them from our own and neighboring States should not be difficult to procure.

IMPORTANCE OF WORK.

The point upon which I wish to lay especial emphasis is the importance of work while there is an opportunity for speaking personally to as many as are present of those who are to be asked to contribute, and to depend as little as possible on writing and by all means to have the full number of subjects accepted

*Read before the Tennessee State Dental Society, 1903.

not later than six months prior to the meeting at which they are to be read.

These, coupled with papers procured from other members and visitors upon subjects in which they are especially interested, ought to furnish a program of unusual interest.

Now, as this is the only recommendation I have to make you may infer that in my opinion our present methods would do pretty well if only everyone would do his duty.

SUBJECT OF ADDRESS.

In casting about for some new subjects on which to write, and failing to find one that seemed to suit in all particulars, the suggestions of friends, coupled with a previous inclination, determined the subject should be ethics. Not particularly as applied to the practice of our profession, but also from a general standpoint; for there is a "vital relationship and organic unity" between professional and general ethics.

Ethics, what a subject for a master mind, in dealing with which, given the ability, one is "troubled with an embarrassment of riches."

Ethics is the foundation on which all law is based, the basis on which the superstructure which we call society is builded.

A man's idea of ethics is his moral standard.

Herbert Spencer says that ethics rightly conceived has to pass judgment on all conduct, which affects the well-being, immediate or remote, of self or others or both.

LETTER OF THE LAW

No doubt the majority live up to the code of ethics, at least the letter of the law is adhered to, but the spirit, "Aye, there's the rub." It's the little things over which we stumble, "An unevenness in the pavement rather than an obstruction in the street."

For example: Some one does an operation particularly well, or it may be it is entirely original, does he always seek the first opportunity to enlighten his slower and more plodding brother? Just as "No man lives unto himself," so no individual member of this society discovers something new without incurring a corresponding responsibility to his fellows, for the good of the profession should always predominate over the interest of the individual.

Those five talents were not given you for your individual

and exclusive use, for our duties to the society are primarily those of fellow-learners and fellow-helpers after the truth.

SHOULD APPEAL TO THE HEART.

Recognizing these demands of sacred principle that should appeal to the heart of everyone, we have only to stop and consider the much that has been so freely given us and then passing the kindness on will be indeed a pleasure.

Emerson in his essay on compensation says, "He is great who confers the most benefits. He is base who receives favors and renders none."

"In the order of nature we cannot render benefits to those from whom we receive them, or only seldom, but the benefits we receive must be rendered again, line for line, deed for deed, cent for cent, to somebody. Beware of too much good staying in your hands. Pay it away quickly in some sort."

IDEA OF ETHICS.

It is generally conceded that our idea of ethics, particularly professional ethics, is in the main one of growth and due largely to environment, and for this reason it would seem no bad idea to incorporate with the course of instruction given in our colleges, a series of lectures on this subject; requiring an examination thereon the same as any other branch. For everyone beginning the study of a profession should have inculcated into him just as high an idea of moral obligation as his appreciation will admit; and yet a study of this kind would, no doubt, prove dryer than anatomy, and as little appreciated as chemistry by the average student. Of course one would not expect an ethicist to come from one of these institutions, full fledged, as did Apollo when he partook of the food of the gods, but he can be so grounded in the principles of moral obligation that the development of the ethical practitioner, the ideal gentleman, will almost invariably follow, however much his previous training along these lines may have been neglected.

RELATIONS TO CLIENTELE.

One of the first and most important things for any professional man to learn, is the ethics of his relation to his clientele. One's obligation to his clientele is limited only by his ability to learn. So not only as a duty do we owe it to ourselves, but immeasureably more do we owe it to our patients that we let slip no opportunity for professional advancement, no chance where-

by we may justly merit the confidence reposed in us. It is not enough that one renders the best services of which he is capable, but the best which his opportunities would have enabled him to render.

An obligation so discharged carries with it its best reward, and the one to be most valued; for the man who has the best interests of his profession at heart, will never have uppermost in his mind the fee he expects to receive, for the true reward for labor must ever be, as some one has said, "Not the wage of a laborer, but the pleasure derived from the exercise of his skill, the satisfaction of a task well done."

DEBT TO PROFESSION.

My preceptor once said in my presence that a good rule for any one to observe in the selection of a dentist, was to always choose one who attended regularly upon the meetings of his State society, and I will go further and say, and contributes whenever possible to the program, thereby making himself the better for having at least tried to help others. For one owes a debt so great to his profession that with his very best efforts he will scarcely be able to make the two columns of the ledger balance.

THE YOUNG MEN.

The last few meetings of this society have been notable for the presence and participation of many young men; to these the society and the profession are under no small obligation to extend a "helping hand;" these may be made individual powers for good by proper encouragement, or very indifferent workers by a lack of interest on the part of older members.

In reading recently I came across the following thought which seems to fit the case well: "If you see anything worthy of praise, speak of it. Even if you cannot do a worthy deed yourself, commend one who does. Praise is a power for good, both God and man prize it. The best worker for his fellows who fails to give praise, fails of doing as well as he can. So do not dilute your cup of cheer till it becomes tasteless and insipid."

In this society there are those of recognized ability who have made it a point to act in this way, giving of their abundance, not in a way to make their less fortunate brother feel his inferiority, but by exercising a "negative beneficience" in so restricting their actions and words, as to leave the impression of seeking information rather than disseminating knowledge.

I wish to leave with you a beautiful and appropriate thought, picked up somewhere; it is that "He who seeks to promote only self will never attain to any very great heights."

THE ORGANIZATION OF THE AMERICAN SOCIETY OF DENTAL SURGEONS.*

BY BURTON LEE THORPE, D. D. S., ST. LOUIS, MO.

That the organized professional society has been one of the most potent factors in any profession's history, from an educational point of view, none can question.

The frequent meeting for the interchange of ideas, the airing of views, the exploding of error, the dissecting of theories, the shattering of hobbies and the demonstrating of various methods has so broadened the minds of men that to-day the local, State and National dental society is but a post-graduate school for the busy practitioner.

If we look backward and realize the condition of affairs sixty-four years ago—the time when our calling blossomed from a trade into a profession—which event was brought about by the inauguration of *The American Journal of Dental Science* (1839); The Baltimore College of Dental Surgery (1839) and The American Society of Dental Surgeons (1840), each organized when practitioners were few and far distant, methods crude compared to now and secrecy, selfishness and charlatanism predominated amongst the majority of our craft. Americans have been the progressive pioneers in developiing our profession and bringing it out from the chaotic and obscure condition it was in seven decades ago.

The first American dental society for mutual improvement was likely held around a Revolutionary camp-fire during the winters of 1781-2, while Gen. George Washington's troops were in winter quarters at Providence, R. I., when Joseph Le Maire, the French patriot, and surgeon-dentist, who came to America with the fleet of Count Rochambeau, instructed in the dental art, James Gardette, a fellow countryman, and dentist, and Joshia Flagg, who is honored by being the first native-born American dentist and grandfather of the late lamented Prof. J. Foster Flagg, whose well-rounded professional career has recently ended. These three patriots improved their time by comparing methods and in practical demonstrations and combined the "first school of dental instruction" and the first dental society into one while in winter quarters with General Washington.

*Read before the Fraternal Dental Society of St. Louis, February 19, 1904.

HORACE H. HAYDEN.

The first local dental societies were started, one in New York City in 1837, another in Virginia. Both were short lived.

Some have said we are the by-product of traveling tinkers, barbers and blacksmiths, but if we review carefully the personnel and the careers of the men who are *the real makers of dentistry,* we can but realize the culture, skill and professional characteristics possessed by these men who were the master minds and leaders in thought and action. To Horace H. Hayden, known as "The Father of American Society of Dental Surgeons," belongs the honor of conceiving the idea of the formation of a National society of dentists. Hayden was a broad-minded, liberally educated man, born at Windsor, Conn., October 13, 1769, of a long line of military ancestors. As a boy he exhibited a great liking for natural history; also became proficient in the ancient languages. At the age of fourteen he made two voyages as cabin-boy to the West Indies; at sixteen, he learned the trade of carpenter and builder from his father and became well versed in architectural drawing and writing.

At the age of twenty-five, one hundred and seven years ago, he went to New York City and studied dentistry with Mr. John Greenwood, who afterwards acquired fame as "Dentist to His Excellency, Gen. George Washington." In 1798 Hayden located at Baltimore, Md. He was examined by a medical and chirurgical board, created under an act of the Assembly for the State of Maryland to regulate the practice of medicine and surgery, found qualified and duly licensed, 1810. To better perfect himself in his specialty, he studied medicine and surgery and soon gained the respect of the medical profession. Without solicitation, both the Jefferson College of Medicine of Philadelphia, and the University of Maryland in 1837 conferred the honorary degree of Doctor of Medicine on him.

Hayden rose rapidly in public confidence. He associated with the most celebrated physicians and medical teachers in Baltimore and his opinions carried great weight. He was the first to give the dental profession caste in Baltimore.

In 1825, he accepted an invitation to deliver a course of lectures on dental surgery to the medical students of the University of Maryland, the first course of its kind ever delivered in the United States. He contributed many essays on dentistry and medicine to the medical journals. He also went into physiological and pathological research and made several new discoveries, espe-

cially investigating the use and functions of the salivary, thyroid, lachrymal and other glands of the human system. Besides being a pioneer dentist, Doctor Hayden was also a pioneer geologist. All through his career he was constantly examining mineral peculiarities and was far ahead of his age in his scientific discoveries. He discovered a new mineral which was named *"Haydenite,"* in his honor. He collected a valuable cabinet of American minerals which became, in 1850, the basis of a complete collection of Roanoke College, Virginia.

So limited was the literature of geological science in English that he mastered the French language to be able to read the text books on geology, from which he made translations. In 1821, he published an interesting work of 400 pages entitled "Geological Essays"—the first general work on geology published in the United States. As a botanist, also, he was well versed and wrote on silk-worm culture, etc. He also excelled with rod and gun, being an enthusiastic sportsman. After having attained personal success and secure a high professional standing, he was anxious to improve the standing of his profession in general. It was he who is known as the "progenitor of the science and art of American dental surgery." He took the initiative in founding the first dental college and the first dental journal, and after consultation with his professional brethren in the eastern cities, who favored his idea of an association of dentists, he issued a call for a meeting of organization. At the American Hotel, New York City, August 18, 1840, at 10 A. M., the following members of the dental profession assembled:

Present personally: Horace H. Hayden, M. D., of Baltimore; L. S. Parmly, of New Orleans; Elisha Baker, of New York; Patrick Houston, M. D., of Charleston, S. C.; Eleazar Parmly, M. D., of New York; Enoch Noyes, of Baltimore; Vernon Cuyler, M. D., of Hartford, Conn.; John Lovejoy, of New York; Chapin A. Harris, M. D., of Baltimore; Jahial Parmly, of New York; Joseph N. Foster, M. D., of New York; Augustus Woodruff Brown, of New York; Charles O. Baker, of New York; J. Smith Dodge, of New York, and Solyman Brown, of New York.

Present by proxy: Lewis Roper, M. D., of Philadelphia; Daniel Harrington, of Philadelphia.

Present by letter: J. McIlhany, of Philadelphia; William Arnold, M. D., of New York; E. B. Gardette, of Philadelphia;

Edward Maynard, M. D., of Washington City; Edward Hudson, M. D., of Philadelphia; Jas. S. Gunnell, M. D., of Washington City; Isaac J. Greenwood, of New York; Josiah F. Flagg, M. D., Boston, and S. Spooner, of New York.

Present by invitation: Leonard Macall, M. D., of Baltimore; John Trenor, M. D., of New York; Elihu Blake, of New York; Doctor Greenwood, of Boston; Doctor Keep, of Boston; Daniel Harwood, M. D., of Boston; Samuel W. Parmly, of New York; E. G. Tucker, M. D., of New York; R. Burr, of Philadelphia; F. B. Chewning, of Richmond, Va.; S. M. Sheppard, of Petersburg, Va.; Joshua Tucker, M. D., of Boston.

These men represented the best of the profession in America at that period. Horace H. Hayden, of Baltimore, called the meeting to order by nominating Elisha Baker, of New York City, as chairman, and Solyman Brown, the poet laureate of dental profession, secretary.

Chapin A. Harris, an intellectual giant of thirty-four years, afterwards known as "The Father of American Dental Surgery," offered a resolution—"that it is the opinion of this convention that the science of dental surgery would be advanced, and the interests of all well-informed practitioners, and the community at large promoted, by the formation of a National society of dentists; therefore, resolved furthermore, that in order to the accomplishment of this object, a committee consisting of three persons, be appointed by the chairman of this convention, to prepare the form of constitution for such a society with instructions to report the same as soon as they shall have performed their duty." The resolution was passed and Chapin A. Harris, Solyman Brown and Vernon Cuyler were appointed Committee on Constitution and By-Laws. While they were engaged in the preparation of the constitution, Doctor Hayden spoke as follows:

"The formation of a National Society of Dentists," he remarked, "had been long a favorite project with himself; and he was happy to say, that he had never found himself wholly alone in this desire. Many years ago he had consulted with the elder Hudson, of Philadelphia, who was favorably inclined to such an occasion. On a visit to Boston and other eastern cities he had consulted his professional brethren on the same question. He found them ready to co-operate in any practicable scheme for the elevation of the profession, but they were inclined to doubt whether anything useful could be accomplished by any other than

individual efforts. Of any advantages that could result from associated influence, they were mostly skeptical, especially in Boston. It was somewhat otherwise with a few of the profession in the city of New York. Here several of his brethren were anxious to disseminate knowledge, cultivate social intercourse, and make an effort to elevate the profession of dental surgery from its present neglected condition to the dignity of a science. In Philadelphia, Baltimore, Washington, and a few other cities his plan was received with favor by some of the individuals with whom he consulted.

"The speaker adverted in the next place to the condition of the dental art at the time he entered upon its duties forty-three years ago. Then, said he, the name of dentist was a reproach and a by-word; but he resolved that his son, whom he intended to educate to his own calling, should find the profession so far improved and exalted as that it should be no longer a disgrace to be called a dentist. To this end he enquired of the elder Greenwood, of New York, for books on the subject of dental theory and practice. That gentleman informed him of the work of John Hunter, which he procured. Soon after he obtained possession of some few other works, both in French and English. From that time he has seen the science assuming more and more importance in the public eye, while men of learning, worth and genius have been added from year to year to the rank of its professors.

"At the present period," continued the speaker, "renewed efforts are making in England, France and Scotland, to place our profession on still higher ground than it has yet attained; and shall we of these United States of America, remain inactive in this grand endeavor? For myself," said he, "I cannot brook defeat in this favorite undertaking. I prefer rather to make renewed and redoubled efforts to secure succeess. If, like the Jews, we are scattered and despised, may we not like that persecuted people, at least hope for a day of restoration to our promised land? There are indeed many obstacles to still overcome. A new race of Canaanites must be expelled from our borders. Many errors must be exploded, and much ignorance must be dispelled, before the light of truth will beam clearly upon our path; but with diligence, zeal and perseverance, we are certain of ultimate success. Let us, therefore, go forward in the good cause, unintimidated by the skepticism of the faithless, the fears of the timid, or the apathy of the selfish. If there are some who prefer to plod onward in the

path of private enterprise, let us unite our efforts in one great social endeavor to elevate our profession from the degraded condition to which it has sunk, and in which it must ever remain until the high minded and well educated amongst its practitioners shall unitedly arise and shake themselves from the dust."

Following these remarks Eleazar Parmly, one of the shining lights of dentistry, in high minded and prophetic language, spoke as follows:

"I feel myself happy in being of the number of those whose names shall be transmitted, in the act which we have just performed, to the latest posterity; and whose memories will live in the history of our profession, long after our mortal remains shall have been gathered to the home of our fathers. We can easily imagine the glow of patriotic enthusiasm which animates, at this day, the hearts of those who can trace the blood which flows in their veins to the heroes of American Revolution, who signed their names to that great political document which secures to us our national independence. And why is it that this exulting self-congratulation and honorable pride are felt by the descendants of that band of patriots whose memories shall live in the hearts of their countrymen as long as they remain the happy citizens of this glorious and independent republic? It is in consequence of the struggles through which they passed in order to acquire the power of calling themselves a free and sovereign people; and of the sacrifices which they made for the good of their common country.

"Will not a similar feeling kindle in the breasts of those who shall come after us, when a small pamphlet shall fall into their hands, either by accident or design, bearing the names of those individuals of this assembly, to whom they can claim the affinity of kindred blood; may not a noble pride be felt by our children, and even by our children's children, when they read that their ancestors were of the little band who met from distant cities, to rescue a noble science from the degradation to which it had been reduced by ignorance, selfishness and quackery? And will it be no source of pleasing recollection to ourselves in the subsequent stages of our existence, that on such a day of such a year, we met each other in this place, and signed a document which declared ourselves members of a profession which afforded ample scope for all the moral, intellectual and physical energies of our nature engaged for the general good of our fellow-men.

"Our forefathers met with opposition and oppression in every

attempt to establish their rights as men. We, too, have met in former years with indignities and sarcasms in every attempt to sustain our privileges as members of our profession. We have, I presume, all of us, the mortification to know, that in this country more particularly than in any other, the community at large have been accustomed to regard men, and gentlemen, too, as unfit for the drawing-rooms of the rich and the fashionable, if they attach themselves to the profession which we are resolved to honor and to elevate. It is time to blot from the annals of society this degrading feature, and to claim for ourselves a full equality with the honorable avocations of our fellow-men. We owe it to ourselves; and we owe it especially to our children.

"The support of the constitution which has just been adopted is, in my opinion, an object worthy of our vigorous and united efforts. Personal fame and aggrandizement, should never be allowed to constitute predominant ingredients in the composition of our professional ambition. Nobler motives shall animate our zeal, while engaged in laying the corner-stone of a structure which, completed by our successors, shall, at some future day, command the respect, if not the admiration, of the world.

"Without such an object, our present undertaking would be unworthy of men, and our present meeting a school-boy's amusement. But I trust we have come together from different cities of the Union, with a settled determination to carry out in detail, with manly vigor, the objects proposed by that instrument which we have just declared to be a fit constitution for an American Society of Surgeon Dentists.

"It will be to each of us a fresh stimulous to exertion, that the failure of our plans is not only confidently predicted, but ardently desired by many whose professional ambition knows no impulse beyond a thirst for gold. Besides, should we fail in our object of giving character and consistency to the profession; of imparting to it the form of a regular science; and of uniting its members for the common good, we shall discourage, perhaps, for years to come, a similar attempt. On the other hand, if by persevering diligence, we not only deserve, but command success; if our proposed society shall effect the object we have in view; and if the prophets among our enemies, like those of Baal, should invoke in vain the interposition of their gods; then, indeed, shall we have performed a work worthy of the high ambition of christians and of men; and the children who come after us, shall not find themselves degraded by the calling of their progenitors."

The objects of the society were "to promote union and harmony among all respectable and well-informed dental surgeons; to advance the science by free communication and interchange of sentiments, either written or verbal, between members of the society, both in this and other countries; in fine, to give character and respectability to the profession, by establishing a line of distinction between the truly meritorious and skillful, and such as riot in the ill-gotten fruit of unblushing impudence and empiricism."

It was named "The American Society of Dental Surgeons," with five dollars the annual dues, with the requirement that "every acting member shall be required to attend the society at least once in three years, unless excused by the society." The constitution recites that each active member by election was required to pay ten dollars to the society. This entitled him to a membership diploma and each candidate examined and admitted to membership was required to pay twenty-five dollars to the treasurer before receiving his diploma, which conferred the degree of *Doctor of Dental Surgery* upon active members or Fellow of the Society only who passed the required examination. This accounts for degrees of the early practitioners.

The funds of the society "might be appropriated to the purchase of lands, tenements, chemical and philosophical apparatus, the publishing of books, tracts and other papers and documents and to such charitable objects as the society may desire," such as "for the aid relief of the widows and orphans of deceased members and for the benefit of living members reduced to want, by sickness or other calamity." It was an odd coincident that Chapin A. Harris, who was chairman of this committee and author of this constitution, died in poverty and left his family in want. The profession in New York held a memorial meeting, October 8, 1860, and started a public subscription known as "The Harris Testimonial Fund" for the relief of his family.

The society offered a reward of premiums to members for dissertations on subjects specified by the society, also for important improvements in mechanical dentistry and for the manufacture of incorruptible teeth, the preference in all such cases to be determined by a special committee. After adopting the Constitution and By-Laws the following officers were elected: Horace H. Hayden, M. D., president, who held this office four years until his death, to be succeeded by Eleazar Parmly; Josiah F.

Flagg, M. D., uncle and god-father of the late Professor J. Foster Flagg, first vice-president; Eleazar Parmly, M. D., second vice-president; E. B. Gardette, son of the pioneer J. H. Gardette of Revolutionary fame, third vice-president (who afterwards declined to serve); Solyman Brown, A. M., recording secretary; Chapin A. Harris, M. D., corresponding secretary; Joseph H. Foster, M. D., librarian.

By resolution the society "approved of the Baltimore College of Dental Surgery, organized the year before, and will co-operate with the other friends of that institution in promoting its designs." Eleazar Parmly was appointed agent of the society to present a petition to the Legislature of the State of New York asking for a charter, with power of conferring the degree of Doctor of Dental Surgery. The writer has been unable to find any record that Doctor Parmly ever accomplished the task assigned him.

The society also voted to "approve the establishment and management of *The American Journal of Dental Science,* and will aid its distribution and design."

The society adjourned to meet the second Tuesday of August, 1841, at Philadelphia. The formation of this society was a new epoch in the history of dental surgery, and not only rescued our profession from oblivion but was the means of making our calling a science, elevating it to the level with other branches of medicine.

At first there was opposition to it by a few narrow-minded members of the profession who did not believe in giving freely of their knowledge to their fellows. Our forefathers possessed the same human weaknesses as do we and they were not above the personalities, jealousies and strifes that creep into all societies. After sixteen years of useful existence, August 7, 1856, the society disbanded at New York to be succeeded by the American Dental Convention, which was organized at Philadelphia, 1855, on a much broader plan, of which Chapin A. Harris was elected the first president. This society was the parent of the American Dental Association, organized 1859, which in turn was followed by our present National Dental Association. The influence for good of the American Society of Dental Surgeons on the profession is incalculable; without it we to-day would not represent what we do as a profession.

Too high an eulogy cannot be paid the men who made the first National Dental Association and its successors what they are—a dental clearing-house for the interchange of ideas.

We can but say of them as did he who uttered these words, "To me the greatest heroes of our profession are they who have given freely their knowledge of science and art to their profssional brethren."

PRESIDENT'S ADDRESS.*

BY EDWARD EVERRETT HAVERSTICK, D. D. S., ST. LOUIS, MO.

I am certainly very thankful to you for the high honor you have conferred upon me by electing me president of the Fraternal Dental Society of St. Louis, Mo. I do not know of any higher local honor you could have given me, for in the Society we have all its name—Fraternal—indicates. No factions; no personalities, but each for the good of all. Here we give freely and receive humbly. Here you may invite your ethical dental friends and be sure that they will receive a hearty and fraternal welcome. You may, also, be certain that they can spend the third Tuesday evening of each month with all the freedom that they exercise in their own offices, besides the important privilege of listening to wide-awake papers from progressive men.

I wish to emphasize the fact that the papers of this year will be especially interesting and very instructive, and I may say positively that there will be no meeting without its papers.

Among the other good papers, I want to call particular attention to the April paper by Dr. Peter Potter, who is a stranger to most of you, but who is one of the most careful and most thorough students of anatomy I have ever known.

Since the organization of the Fraternal Dental Society of St. Louis, its growth has been constant and the quality of its new members is not lacking. The Society has done well in the past, but there awaits it a future which will make all of us proud of our membership in it. It has all that is requisite to make a good society; members high in every phase of dentistry, science, art, prosthetics, operative dentistry, etc.

We expect to make an effort to double the membership of the Society during the year 1904, and I know that we shall have the co-operation of every member in this important effort. If you will allow me, I should like to suggest a way to accomplish this end. The first step has already been made in completing the pro-

*Read before the Fraternal Dental Society, St. Louis, January, 1904.

gram for the entire year, thereby insuring the dental profession that there will be something good here at each meeting. In offering the second step, it is important that I mention the names of some of the members who have been most faithful to the Society in their attendance, in their efforts to secure new members, and in furnishing papers. Among these let me mention Doctors Whipple, Thorpe, Mathae, Prinz, Winter and Lischer. Some of the members of the Society have been of equal importance to the Society since they have been associated with it. But we shall expect even more from them, and more from those whose names I have mentioned, and much more from those whose names I have not called. Indeed, we want each member with his shoulder to the wheel, ready to roll up the best there is in the field. The third step is to work out well the material which is presented the Society in the form of papers, by taking an enthusiastic part in the discussions. There are many good men who are not members of a dental society and many who are members of other societies, but all of whom would be glad to join our Society if they knew the privileges and profits they could enjoy here. This Society made a most important move when it indorsed the Fourth International Dental Congress by unanimously adopting the following resolution:

WHEREAS, The Fourth International Dental Congress, which is to meet in St. Louis August 29-September 3, 1904, under the auspices of the Louisiana Purchase Exposition, is to be the greatest event in the history of dentistry.

WHEREAS, As the Fraternal Dental Society of St. Louis is progressive and stands for the best in dentistry and its interests; therefore be it

Resolved, That the Fraternal Dental Society of St. Louis heartily indorses the Fourth International Dental Congress, and tenders it their aid and support as a Society and as individuals.

By the adoption of the above resolution, this Society not only became known throughout the country, but went on record, for all time to come, as a society ready to do all in its power for the advancement of dentistry. The profession will recognize the work of the members of the Fraternal Dental Society of St. Louis, and, no doubt, we shall have the rare opportunity of listening to addresses by some of our distinguished guests of the Congress.

We owe much to Doctor Thorpe for his unceasing efforts to

bring the Fourth International Dental Congress here, and for his liberality and magnanimous sacrifice in giving his time and money in this effort.

The Fourth International Dental Congress will bring the while dental world into one vast school at our own door; and no ethical dentist who is interested in his profession, can afford to remain without its educational walls, especially when the small sum of ten ($10) dollars admits him to full membership. It is no little matter to be able to mingle with the best men in dentistry who will attend this Congress.

The "Fraternal" was the first society in St. Louis to indorse the Fourth International Dental Congress and should be the first to make a subscription as a society. While the Society's treasury will not permit of a donation, each member should make a personal donation, say of one ($1) dollar each, to a fund that should be sent to the treasurer of the Congress as a contribution from this Society. Five of the members, Doctors Thorpe, Bassett, Le Cron, Dameron and Haverstick, have already given twenty-five ($25) dollars to his fund.

THE CARE OF THE TEETH OF THE POOR.*

BY E. E. HAVERSTICK, D. D. S., ST. LOUIS, MO.

The care of the teeth of the poor is one of the most difficult problems that has presented itself to the dental profession.

We are all willing to do some charity work, but we are not willing to do charity work unless that work is appreciated. We have done our most difficult and distressing work for poor people, and often these people have not realized in the smallest degree the seriousness of the operations. We have put into the best possible order a mouth that was in the most deplorable condition, and when the work was completed the patient would pay grudgingly the exceedingly small fee for our services, or, if no fee at all were charged, he would complain of the severe pain he had been subjected to. Within a year or two this patient would return to us with a great quantity of fermenting food particles about his teeth and a breath that would stagger us from our operating chair.

The patient tells us the story of how he has had no pain since

*Read before the Fraternal Dental Society, St. Louis, Mo.

he saw us last until a few days previous and tells us of what a pleasure it was to him to be able to masticate his food without the slightest difficulty or pain for so long a time. Indeed, all in all, how happy he has been.

He concludes, however, by saying that he had neglected his teeth lately, and that he is sorry for it. Stimulated by the relief and comfort we have given him, we are willing to undertake our unhappy task again, even though he has been negligent. But, nevertheless, we wonder what we can do to correct this unhealthy and unpleasant state of affairs. And the reply to this question is the object of this paper. We may not be able to answer it in full, still we hope to start your thoughts on the right lines.

The patient to whom we have referred is either ignorant or lazy, and it is not improbable that he shares a good part of both misfortunes. Yet there are thousands of the poor class of people in his sorrowful condition. If he is ignorant, we must educate him; but, if he is lazy, we can do but little with him. He should be hanged. So we shall take that he is ignorant in regard to the care of his teeth, yet industrious; and, consequently, we owe him careful and conscientious instruction; and, while we may not be able to cure him of his slovenness, we shall have some effect on him and he upon his children, until generations will overcome his negligence.

Granting, then, that education is what is most needed, how shall we educate outside of our offices?

We must educate the people with regard to the care of their teeth in the same manner in which they are educated along other lines; and that is to say, by introducing into our public schools a course of dentistry, such as each person should practice in his own home. In other words, a course of instruction in oral hygiene and oral anatomy.

In order to introduce such a course into our public schools, it will be necessary to amend Section No. 9958 of the Session Act of Missouri of 1901. This Section relates to the branches on which teachers must pass an examination for their license to teach in the public schools. The amendment should make the law so strong on this point that no teacher who does not understand the laws of oral hygiene, who does not know the ill results of the too early extraction, or the too long retention of the temporary teeth, and who does not know that the sixth year molar is

a permanent tooth, and how important it is, would be permitted to enter the school-room to instruct children.

The teacher should know the time of the eruption of the permanent teeth, the anatomy of the teeth, the results from the death of an unattended dental pulp, that swelling comes from devitalized teeth, know how to clean the teeth and such general things as these, so simple and yet so very important. She should be required to instruct her pupils on the above mentioned points, and to try to interest them in their teeth—the organs which are most essential to health, beauty and happiness.

She should be required to examine the teeth of her pupils as to their cleanliness and soundness. These examinations should be made every morning, in any manner she chooses, and a thorough examination made once a week.

Such a law would force our normal school, and all schools which prepare teachers, to introduce into their course of instruction, a course in oral hygiene and oral anatomy, because the object of these schools is to prepare teachers to meet the demands of teachers. And this would create chairs in these schools, which could be filled by Doctors of Dental Surgery only.

Dentists should not examine the teeth of the pupils in the public schools, as is the case in some European cities, because these examinations cannot be productive of such good results as those conducted by the teacher. In the first place, the plan introduces a form of politics, which must be avoided as much as possible, and, in the second place, such examining dentists cannot possibly have the influence over the pupils that their teacher has, and he cannot possibly watch them as closely. The eleemosynary and penal institutions should be provided with tooth-brushes and tooth-powder, as well as with clothes; so should the orphans' homes.

The next most important channel of dental education is through the daily newspapers, as was suggested by Dr. W. L. Whipple at one of our meetings last year. The dental profession should give some time to writing intelligent articles for the daily newspapers. These articles should not be written in strictly professional language, but in the language of the newspapers and in the form of interesting stories, and should be accompanied by illustrations, but not such as are usual with the newspaper dentist.

The members of this Society should write a series of articles

for the daily newspapers and these articles should be given to the Executive Committee, who would edit them and give them to the papers for publication, without the signature of the writer, so that they could not become a means of advertisement, but would be for the good of the community. The Executive Committee should, also, consider the proposed revision of the school law and draft an amendment. Some may say that such a law could not be passed, but it can be passed and it will only be a matter of a few years until it will be passed. If we could interest every dentist in this movement, each State senator and State representative could be spoken to personally by the dentist who does his work, before the next session of the General Assembly. Letters should be written to each dentist in the State, urging him to assist in passing this law.

There is one other place where inestimable good can be done in the way of education of the poor, and that is in the orphans' homes. Dentists could not find time to do the actual work which should be done for the children in the orphans' homes, but every dentist would have time to spend an hour or two a week in teaching these children oral hygiene, and such instruction would be worth many times as much to these children as actual operative dentistry, which could be accomplished in the same length of time. They should be taught the use of the tooth-brush and tooth-powder.

Let this be your motto: To educate the people in prophylactic dentistry will do more to elevate dentistry than anything else.

Judging from what has been accomplished in dentistry in the last century, what do you think will be accomplished during the next century? New fields are opening and we must work in them.

CURRENT ARTICLES

ETIOLOGY OF THE FOUR-TERM COURSE.

BY C. L. HUNGERFORD, D. D. S., KANSAS CITY, MO.

Someone has aptly said that the time to commence to educate a man is one hundred years before he is born. The Roman Catholic church holds that if it has the care of a child until it is seven years old, it will never be anything but a Roman Catholic.

Now, I am willing to stretch a point to meet the requirements of the elastic consciences of the advocates of the four-term course, who hope for the extra hundreds (which have as yet failed to materialize), and will grant them twenty-one years; but if the foundation for a dental education has not been laid by that time, or when a young man is ready to enter college, it will never be laid, and twenty years in a dental college will but turn out a nincompoop, whose veneering but covers thinly the rotten pine which it conceals, and perhaps may have spoiled a good grocer, a poet or politician.

In the eternal fitness of things, every man has a natural aptitude in some direction, and he is to be counted wise indeed who knows his natural bent; but were it possible to pension off the barnacles who now presume to pass upon dental curriculums and the requirements for admission to our dental schools, it might soon be found feasible to institute an examination that would, at least, demonstrate the candidate's fitness to enter a dental college and join the ranks of a profession that calls for the highest mechanical skill and artistic ability, together with such knowledge of natural laws as would fit a man for any walk in life. That examination will, of necessity, be of the kindergarten order, and it will, perhaps, run something like this: Can you drive a nail? Let me see you do it. Take that plank and saw it up and let me see you make a square box. Sharpen this lead pencil so as to conserve the greatest amount of material and give the greatest amount of use.

(Here is where the dental profession will generally fall down.) Pick out the shades of blue, green, yellow and violet from this bunch of colors. What forms possess the greatest amount of strength with the greatest conservation of material? What lines are lines of beauty? etc., etc., etc. With such an examination, we would then know if we had the stuff of which dentists are made. Then could our dental colleges commence to teach *dentistry*: the ways and means, the whys and wherefores. God help the men who think because they have *named* a thing, that they have *explained* it! God help the students who sit under their tutelage!

Let us pause for a moment, and look at the general mental characteristics of the men who now so strenuously advocate four years to put the student upon the path which ought to be entered in one or two; for, though the goal of successful practice looms far in the distance and may never be reached, yet two terms should be enough to put the student on that path, if he had a sufficient foundation upon which to travel.

Now, let us consider: There is Dr. ———, who—but no, let us not mention his name; let us not mention any names. He is a good fellow; hospitable, generous, even if "business is business," but oblivion is fast falling upon his head and upon the heads of his fellows—why ring in their names? Great Karma will give them and all of us another chance in other lives that we are all destined to live. But let us no longer be awed by men whose pull and politics are their sole stock in trade, as they dole out the spoils of office to their hired henchmen. Thank God, I do not know the names of these so-called "professors," who, under the shallow pretext of raising the standard of dentistry, are but daily degrading its educational features into the last resort of commercial rivalry—viz., soliciting by letter and by inducements like the skirted prowlers of the night. The alchemy that transmutes lead into gold is not in the possession of commercial sharks, and the way to advance dentistry to greater achievements is to interest better men, with higher hopes and nobler aspirations. Time limit has nothing to do with true education. It is the raw material we are after, and, until we get that, no goat's lymph injected from any rostrum will make new blood or purge the dental body from the illicit rivalry and commercial curse under which it labors today.—*Western Dental Journal.*

FILLING CANALS IN DECIDUOUS TEETH.

Dr. Gillette, New York.

In doubtful root canals in deciduous teeth, where there are, as very often occurs, good reasons for limiting the treatment —doing things as much as is consistent with safety, I have found much satisfaction from simply stuffing those canals with a mixture of iodoform and vaseline mixed quite stiff, covering it first with gutta-percha usually, and then using whatever filling is chosen for the cavity, working that iodoform mixture well up into the canals, getting it to the ends, if possible, but if I cannot get it there with a reasonable amount of effort, getting it as far as I can.—*Extract Items.*

SEPARATING MEDIUM.

E. E. Warren.

Strain a saturated solution of soap and water and add an equal part of lard oil; color if desired. This is simple and inexpensive and separates cleaner than anything I have ever used. In time the ingredients will separate and the bottle will have to be shaken.—*Dental Digest.*

FORMALDEHYDE.

Dr. Lawrence.

Don't use the formaldehyde paste which is mixed with vaseline. When formaldehyde is in a moist state it is escharotic; also toxic, and getting it through the apex or on the gum will give trouble. When dry its caustic and toxic properties virtually cease. Use it in that form (Leininger's) and not in the tube paste form.—*Dental Journal.*

VULCANIZING BETWEEN SWAGED POLISHED PLATES.

H. Mahoney, Eng.

I usually take two impressions, and make a cast from one, either in plaster or Spence metal, or press some softened compc into the cooled wet impression to make a reverse.

Upon this reverse I prepare the thin soft metal for lining the impression, and with the aid of a block of rubber (such as is used on bicycle pedals), work the thin metal into close contact. As an additional aid I use a piece of compo on the end of a scraper handle, which has been pressed whilst soft upon the model, thus forming an impression of the palate with rugæ. This compo when hard is used for pressing the soft metal upon the model to get it into close contact before placing on impression. I then take the thin metal off the model and place it upon the impression which is to be used, and swage it on by imbedding the impression tray in compo, in the cup of Ash's swager. I then place an iron ring of the same diameter of the cup, and about three inches in depth, over the impression. and in it a sheet of thin rubber (the rubber dam used in the surgery is very suitable), as a diaphragm. Into this rubber I pour pumice powder, over it place the rubber block supplied with the swager, and place the whole in the swaging press. Perfect contact between the soft metal and the impression is now obtained, and the plaster cast is run upon the metal lining. When the compo is softened and taken off the metal remains on the plaster model, which is then used for building up the case.

In putting on the wax (I do not often use metal base-plates), I press it on to the model and at the same time make the impress of the rugæ on the lingual surface, by pressing upon it the compo on scraper handle previously mentioned. Having built up the teeth, I take another piece of soft metal of suitable size and shape, press it upon the model obtained from first impression, on the palatal portion only, by means of the compo impression on the scraper handle, until the marks of rugæ, etc., are obtained as plainly as possible on the soft metal. The metal is then transferred to the built-up case, pressed on to the palate with the compo, and with a tooth-brush handle filed

into the shape of a chaser I festoon round the backs of the teeth as on a plate piece. I then (and not before, as there is a liability of moving the teeth in placing the metal plate on the wax), take the metal off the bite frame, put into flask, boil out wax, and pack in the ordinary manner. After vulcanising very little scraping is needed, and a case can be finished in a few minutes after taking from the flask.—*Jour. B. D. A.*

COTTON AN IDEAL SEPARATOR.

Dr. Silvas.

I am impressed that cotton more nearly approaches the ideal separator, in as much as it has more of the advantages and less of the disadvantages of the other materials Its greatest disadvantage is that it becomes offensive, though this can be overcome by dipping the cotton or swabbing the separator after it is in place with chloro-percha.

It takes but a few minutes for the chloroform to evaporate, which leaves a rubber covering which is practically impervious. Increased pressure can be obtained with this method of separating by making a surgeon's knot and placing it between the teeth, then packing in the cotton,—as much as the space will admit,—then tie at the cutting edge of the tooth. This makes a knot at the cervical margin and at the cutting edge, which forces the cotton into a smaller space, thus increasing the pressure.—*Brief.*

SOME USES OF PLATINA FOIL IN THE WORKROOM.

D. E. Caush, Eng.

(1) In those cases where it is necessary to make the addition of a tooth to a metal plate the foil does away with the necessity of swaging a small piece of plate.

(2) For repairing cracks in a metal plate it is again invaluable.

(3) For putting a new tooth on to an old backing, especially in those cases where the holes for the pins of the tooth have been made too large or too far apart.

(4) Used for the purpose of backing shallow saddleback bicuspids and molars to be used in close bite for plate work.

(5) Used for the purpose of making a porcelain-faced crown. After the metal crown is swaged by "Sharpe's" or any other method, cut out a piece with a fret-saw and fit a tooth backed with platina foil into position; it can then be soldered from underneath, making a cement-tight crown.—*Jour. B. D. A.*

A NEW METHOD OF REPAIRING AMALGAM FILLINGS.

Stanley Read, Eng.

It is often that one meets with a tooth one of whose sides has broken away from an otherwise perfectly good amalgam filling, and for lack of a means of making the new amalgam adhere to that which is already in the tooth, it is necessary either to cut out the entire filling or the greater part of it, to make sufficient hold to retain the repairing piece of new amalgam. The following method of making the amalgam adhere will be found useful: Clean the surface of the filling to be repaired with a crosscut bur, leaving it in polished ridges. Wipe the surface over with phosphoric acid—I use the liquid of Harvard cement; take a small piece of the soft amalgam and burnish it over the prepared surface, when it will combine at once; then build the rest of the amalgam up to the required shape.—*Jour. B. D. A.*

GAIN ACCESS TO CANALS BEFORE FILLING.

F. W. Harnden.

As the perfect filling of canals is the ultimate object of all canal treatment, why not gain free access at any cost?

In distal cavities, especially in molars, where lack of room is such a handicap, great satisfaction is gained by filling the distal cavity, and then opening into the pulp chamber from the morsal surface.—*Gazette.*

USEFUL HINT.

Before setting crowns or bridges, flow a thin layer of chloropercha inside your crown or abutment caps before setting with cement. It facilitates removal in case of necessity.

SOCIETY

FOURTH INTERNATIONAL DENTAL CONGRESS, ST. LOUIS, MO., AUGUST 29 TO SEPTEMBER 3, 1904.

COMMITTEE OF ORGANIZATION DENTAL CONGRESS.

H. J. Burkhart, Chairman, Batavia, N. Y.; E. C. Kirk, Secretary, Lock Box 1615, Philadelphia, Pa.; R. H. Hofheinz, Wm. Carr, W. E. Boardman, V. E. Turner, J. Y. Crawford, M. F. Finley, J. W. David, Wm. Crenshaw, Don M. Gallie, G. V. I. Brown, A. H. Peck, J. D. Patterson, B. L. Thorpe.

The Department of Congresses of the Universal Exposition, St. Louis, 1904, has nominated the Committee of Organization of the Fourth International Dental Congress which was appointed by the National Dental Association, and has instructed the committee thus appointed to proceed with the work of organization of said Congress.

Pursuant to the instruction of the Director of Congresses of the Universal Exposition, 1904, the Committee of Organization presents the subjoined outline of the plan of organization of the Dental Congress.

The Congress will be divided into two departments: Department A—Science (divided into four sections). Department B—Applied Science (divided into six sections).

DEPARTMENT A—SCIENCE.

I. Anatomy, Physiology, Histology, and Microscopy. Chairman, M. H. Cryer, 1420 Chestnut street, Philadelphia, Pa.

II. Etiology, Pathology and Bacteriology. Chairman, R. H. Hofheinz, Chamber of Commerce, Rochester, N. Y.

III. Chemistry and Metallurgy. Chairman, J. D. Hodgen, 1005 Sutter street, San Francisco, Cal.

IV. Oral Hygiene, Prophylaxis, Materia Medica and Therapeutics and Electro-therapeutics. Chairman, A. H. Peck, 92 State street, Chicago, Ill.

DEPARTMENT B—APPLIED SCIENCE.

V. Oral Surgery. Chairman, G. V. I. Brown, 445 Milwaukee avenue, Milwaukee, Wis.

VI. Orthodontia. Chairman, E. H. Angle, 1023 N. Grand avenue, St. Louis, Mo.

VII. Operative Dentistry. Chairman, C. N. Johnson, Marshall Field Building, Chicago, Ill.

VIII. Prosthesis. Chairman, C. R. Turner, 33d and Locust streets, Philadelphia, Pa.

IX. Education, Nomenclature, Literature and History. Chairman, Truman W. Brophy, Marshall Field Building, Chicago, Ill.

X. Legislation. Chairman, Wm. Carr, 35 West 46th street, New York, N. Y.

COMMITTEES.

Following are the committees appointed: Finance—Chairman, C. S. Butler, 680 Main street, Buffalo, N. Y. Program—Chairman, A. H. Peck, 92 State street, Chicago, Ill. Exhibits—Chairman, D. M. Gallie, 100 State street, Chicago, Ill. Transportation—(To be appointed.) Reception—Chairman, B. Holly Smith, 1007 Madison avenue, Baltimore, Md. Registration Chairman, B. L. Thorpe, 3666 Olive street, St. Louis, Mo. Printing and Publication—Chairman, W. E. Boardman, 184 Boylston street, Boston, Mass. Conference with State and Local Dental Societies—Chairman, J. A. Libbey, 524 Penn avenue, Pittsburg, Pa. Dental Legislation—Chairman, Wm. Carr, 35 West 46th street, New York, N. Y. Auditing—(Committee of Organization.) Invitation—Chairman, L. G. Noel, 527½ Church street, Nashville, Tenn. Membership—Chairman, J. D. Patterson, Keith and Perry Building, Kansas City, Mo. Educational Methods—Chairman, T. W. Brophy, Marshall Field Building, Chicago, Ill. Oral Surgery—Chairman, G. V. I. Brown, 445 Milwaukee avenue, Milwaukee, Wis. Prosthetic Dentistry—Chairman, C. R. Turner, 33d and Locust streets, Philadelphia, Pa. Local Committee of Arrangements and Reception—Chairman, Wm. Conrad, 3666 Olive street, St. Louis, Mo. Essays—Chairman, Wilbur F. Litch, 1500 Locust street, Philadelphia, Pa. History of Dentistry—Chairman, Wm. H. Trueman, 900 Spruce street, Philadelphia, Pa. Nomenclature—Chairman, A. H. Thompson, 720 Kansas avenue, Topeka, Kans. Promotion of Appointment of Dental Surgeons in the Armies and Navies of the World—Chairman, Wms. Donnally, 1018 14th street, N. W., Washington, D. C. Care of the Teeth of the Poor—Chairman, Thomas Fillebrown, 175 Newbury street, Boston, Mass. Etiology, Pathology and Bacteriology—Chairman, R. H. Hofheinz, Chamber of Commerce, Rochester, N. Y. Prize Essays—Chairman, James Truman, 4505 Chester avenue, Philadelphia, Pa. Oral Hygiene, Prophylaxis, Materia Medica and Therapeutics, and Electro-therapeutics—Chairman, A. H. Peck, 92 State street, Chicago, Ill. Operative Dentistry—Chairman, C. N. Johnson, Marshall Field Building, Chicago, Ill. Resolutions—Chairman, J. Y. Crawford, Jackson Building, Nashville, Tenn. Clinics—Chairman, J. P. Gray, 24 Berry Block, Nashville, Tenn. Nominations—(To be appointed.) Ad Interim—Chairman, G. V. I. Brown, 445 Milwaukee avenue, Milwaukee, Wis.

The officers of the Congress, president, vice-presidents, secretary and treasurer, will be elected by the Congress at large at the time of the meeting, and will be nominated by the Nominating Committee.

The Fourth International Dental Congress, which will be held August 29 to September 3 inclusive, 1904, will be representative of the existing status of dentistry throughout the world. It is intended further that the Congress shall set forth the history and material progress of dentistry from its crude beginnings through its developmental stages, up to its present condition as a scientific profession.

The International Dental Congress is but one of the large number of congresses to be held during the period of the Louisiana Purchase Exposition, and these in their entirety are intended to exhibit the intellectual progress of the world, as the Exposition will set forth the material progress which has taken place since the Columbian Exposition in 1893.

It is important that each member of the dental profession in America regard this effort to hold an International Dental Congress as a matter in which he has an individual interest, and one which he is under obligation to personally help toward a successful issue. The dental profession of America has not only its own professional record to maintain with a just pride, but, as it is called upon to act the part of host in a gathering of our colleagues from all parts of the world, it has to sustain the reputation of American hospitality as well.

The Committee of Organization appeals earnestly to each member of the profession to do his part in making the Congress a success. Later bulletins will be issued setting forth the personnel of the organization and other particulars, when the details have been more fully arranged.

H. J. Burkhart, *Chairman,*
E. C. Kirk, *Secretary.*

Approved:
Howard J. Rogers, *Director of Congresses.*
David R. Francis, *President of Exposition.*

WISCONSIN STATE BOARD OF DENTAL EXAMINERS.

The next meeting of the Wisconsin State Board of Dental Examiners, for examination of candidates desiring license to practice dentistry in Wisconsin, will be held in Milwaukee, at Hotel Pfister, June 1, 1904.

Application must be made to the Secretary fifteen days before examination. Candidate must be a graduate of a reputable dental college, or have been engaged in the reputable practice of dentistry consecutively for four years, or an apprentice to a dentist engaged in the reputable practice of dentistry for five years.

J. J. Wright, D. D. S., *Secretary,*
Milwaukee, Wis.

PROGRAM OF THE AMERICAN MEDICAL ASSOCIATION, SECTION OF STOMATOLOGY.

DENTAL EDUCATION.

1. The Value of Symmetry in the Development of Professional Character and Education (Chairman's Address)—George F. Eames, Boston, Mass.

2. The Evolution of Standards in Dental Education—Charles Chittenden, Madison, Wis.

3. Phases of Dental Education—A. E. Baldwin, Chicago, Ill.

4. Dental Education (A Retrospective and Prospective View)—John S. Marshall, San Francisco, Cal.

THE DENTAL PULP.

5. Neoplasm of the Tooth Pulp—Vida A. Latham, Chicago, Ill.

6. Vital Principles in Adult Pulp—R. R. Andrews, Cambridge, Mass.

7. Degeneration of the Tooth Pulp—Eugene S. Talbot, Chicago, Ill.

8. The Pulp—Jos. Arkovy, Budapest, Hungary.

9. A System for Surgical Treatment of Hare-lip, Cleft Palate and Facial Deformities and Post Operative Speech Education—George V. I. Brown, Milwaukee, Wis.

10. Multiple Fracture of Lower Jaw Complicated by Simultaneous Fracture of the Upper Jaw—Thomas L. Gilmer, Chicago, Ill.

11. Impacted Teeth, Their Diagnosis, Liberation and Extraction—Matthew H. Cryer, Philadelphia, Pa.

12. Anchylosis of the Jaw—G. Lenox Curtis, New York City, N. Y.

13. Necrosis of the Bones of the Face—Stewart L. McCurdy, Pittsburg, Pa.

14. Treatment of Pathological Irregularities of the Teeth—M. H. Fletcher, Cincinnati, Ohio.

15. Report of a Case of Vincent's Angina and Stomatitis with Photographs—George C. Crandall, St. Louis, Mo.

16. Oral Infection and Sterilization—M. L. Rhein, New York City, New York.

17. Concerning Changes in the Salivary Secretions as Affected by Systemic Disease—Heinrich Stern, New York City, N. Y.; William Lederer, New York City, N. Y.

18. Prophylaxis in Relation to Tooth Environment and to the Prophylactic Value of Materials Employed—Chas. F. Allan, Newburgh, New York.

19. The Physician's Duty to the Child from a Dental Standpoint—Alice M. Steeves, Boston, Mass.

20. Ethics—Adelbert H. Peck, Chicago, Ill.

DR. GEORGE F. EAMES, *Chairman*,
EUGENE S. TALBOT, *Secretary*.

NORTHERN OHIO DENTAL ASSOCIATION.

The forty-fifth annual meeting of this society will be held in Cleveland, Ohio. June 7, 8, 9, 1904. The following excellent program has been arranged:

ESSAYS.

1. President's address. Dr. W. H. Fowler, Painesville.

2. What are the Conditions which Develop the Maximum Adhesion of Oxyphosphates? W. V. B. Ames, D. D. S., Chicago, Ill.

3. Dental Poverty. G. S. Junkerman, Cincinnati.

4. Some Thoughts on How to Better Serve our Patients. J. S. Van Meter, D. D. S., Galion.

5. A Few Thoughts on Painless Dentistry. J. W. Van Doorn, D. D. S., Cleveland.

6. Ten Years at Hickory Corners. R. D. Wallace, D. D. S., Scio.

7. Occlusion and Malocclusion. V. E. Barnes, D. D. S., Cleveland.

8. The Relief of Pain in Orthodontia. C. A. Hawley, D. D. S., Columbus.

9. The Duties and Responsibilities of the Twentieth Century Dentist. H. C. Brown, D. D. S., Columbus.

10. Extirpation of the Pulp Under Pressure Anesthesia, Including a Study of After-results. R. Ottolengui, M. D. S., New York City.

11. What Shall We Do With Our Neurasthenic Patients? C. C. Mottenger, D. D. S., Akron.

12. One method of Using Sulphuric Ether in Oral Surgery. W. H. Todd, D. D. S., Columbus.

CLINICS.

1. Carl A. Hamann, M. D., Cleveland, Oral Surgery.

2. Howard S. Straight, M. D., Cleveland, Chloroform or Ether in Surgery of the Throat.

3. William R. Lincoln, M. D. Cleveland, Nitrous Oxide Anesthetic in the Removal of Adnoids and Tonsils.

4. Royce D. Fry, M. D., Cleveland, Nitrous Oxide Anesthetic in Asch Operation for Deflected Septum of the Nose.

5. Thomas A. Burke, M. D., Cleveland, Ethel Chloride as a General Anesthetic in the Removal of Adenoids and Tonsils.

6. H. Large, M. D., Cleveland, Ethel Bromide as a General Anesthetic in Removing Adenoids and Tonsils.

7. John R. Owens, D. D. S., Cleveland, Nitrous Oxide Anesthetic in the Extraction of Teeth.

8. Daniel H. Ziegler, D. D. S., Cleveland, Nitrous Oxide and Oxygen Anesthetic in the Extraction of Teeth.

The above clinics have been especially selected for the demonstration of the value of the various general anesthetics, and will be very valuable to those interested in anesthesia.

9. Dr. J. R. Callahan, Cincinnati, Tin and Gold in Definite Proportions.

10. Dr. S. B. Dewey, Cleveland, subject to be announced.

11. Dr. J. R. Bell, Cleveland, Removal of Concretions from the Teeth with Instruments and Chemicals.

12. Dr. J. W. McDill, Cleveland, Cataphoric Demonstration.

13. Dr. J. M. Yahres, Cleveland, Cataphoric Demonstration.

14. Dr. F. F. Chapman, Cleveland, Cataphoric Demonstration.

15. Dr. S. M. Weaver, Cleveland, Cataphoric Demonstration.

16. Dr. George E. Bishop, Cleveland, Method of Using Davis Crown.

17. Dr. T. H. Whitesides, Youngstown, Various Methods of Mounting Porcelain Crowns.

18. Dr. F. L. Olds, Cleveland, A Rapid Method of Making "Half Cap."

19. Dr. Wm. O. Speith, Warren, O., A Few Points I Have Learned About Crown and Bridge-work.

20. Dr. C. G. Myers, Cleveland, The Knapp Crown.

21. Dr. H. F. Harvey, Cleveland, Porcelain Inlays.

22. Dr. R. A. Dinsmore, Cleveland, Porcelain Inlays.

23. Dr. Geo. N. Wasser, Cleveland, Porcelain Inlays.

24. Dr. F. L. Miles, Cleveland, A Little Trick in Porcelain Work.

25. Dr. A. L. Parsons, Cleveland, Porcelain Inlay Combined with Gold for Anterior Proximal Surfaces.

26. Dr. F. J. Spargur, Cleveland, subject to be announced.

27. Dr. E. S. Kiplinger, Lorain, O., A Mouth Prop.

28 .Dr. I. W. Brown, Cleveland, Treatment of Abscess with Fistula.

29. Dr. H. C. Kenyon, Cleveland, subject to be announced.

30. Dr. Geo. B. Snow, Buffalo, N. Y., Face-bow Articulator.

31. Dr. L. L. Bosworth, Cleveland, Construction and Management of an Electric Furnace.

32. Dr. N. H. Bishop, Andover, O., Setting Posts for Retention of Gold Contours.

33. Dr. E. B. Ledge, Cleveland, The Taking of X-Ray Pictures.

34. Dr. W. A. Price, Cleveland, Combination of Cataphoric Instrument, Electric Furnace and Gold Annealer Connected to the Same Meter.

35. Dr. C. E. Line, Cleveland, Dr. R. H. Smith's Original Steel Plunger, Corrugator, Serrator and Sharpener.

36. Dr. A. S. Condit, Mt. Vernon, O., Condit's Removable Bridge.

37. Dr. F. H. Cole, Syracuse, N. Y., Comin's Gold Crown and Bridge-work System.

38. Mr. H. M. Brewster, Chicago, Ill., The Use of High-fusing Oil Colors in Inlay and Prosthodontia.

39. Dr. W. V. B. Ames, Chicago, Ill., The Working of Cements.

40. Dr. H. G. Knapp, Pittsburg, Pa., Ramesite Cements.

41. Johnson & Johnson, New Jersey, The Application of Napkin and Cotton Rolls in Dentistry.

MONTANA STATE EXAMINING BOARD.

The annual meeting of the Montana State Board of Dental Examiners will be held in Helena, June 6, 7, 8, 1904. Application blanks may be obtained from the Secretary. Applicants must furnish all materials for demostration.

D. J. Wait, *Secretary,*
Helena, Mont.

INDIAN TERRITORY DENTAL ASSOCIATION.

The Indian Territory Dental Asociation will meet in Muskogee, I. T., the 5th and 6th of May, to complete the organization of its society. At that time a number of good papers and clinics will be given. All ethical members of the profession are invited.

S. A. Long,
Corresponding Secretary.

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The National Association of Dental Examiners will hold their annual meeting in the Coliseum building, corner of 13th and Olive streets, St. Louis, Mo., on the 25th, 26th and 27th of August, beginning promptly at 10 a. m.

Telegraph and telephone offices in the building. Hotel accommodations will be secured for the members. Special railroad rates will be secured for those leaving New York on the morning of the 23rd.

Charles A. Meeker, D. D. S., *Secretary and Treasurer.*

DENTAL COMMISSIONERS OF CONNECTICUT.

The Dental Commissioners of Connecticut hereby give notice that they will meet at Hartford on May 14th, as prescribed by law, and will adjourn to July, for the summer examinations, so as to enable those students who do not finish their college or other educational course until June, an opportunity to secure a license to practice without the long delay now made necessary because of being required to wait until November.

Hereafter the November examinations will be dispensed with until further notice.

Examinations to secure a license to practice dentistry in Connecticut will be held July 14, 15 and 16, 1904, at Hartford, Conn.

Full particulars will be published in the dental journals, or may be secured of the Recorder.

By direction of the Dental Commissioners.

J. Tenney Barker, *Recorder,*
Wallingford, Conn.

OHIO STATE BOARD OF DENTAL EXAMINERS.

The Board of Dental Examiners of the State of Ohio will meet in Columbus, O., June 28th, 29th and 30th, at the Hotel Hartman, for examination of candidates for certificates of registration.

Application should be filed with the Secretary by June 18th.

For further information address,

H. C. Brown, *Secretary.*
185 E. State St., Columbus, O.

BOARD OF DENTAL EXAMINERS OF PENNSYLVANIA.

The Board of Dental Examiners of Pennsylvania will conduct examinations simultaneously in Philadelphia and Pittsburg, June 8-11, 1904.

Applicants for examinations must address the Hon. C. N. Schaeffer, Secretary Dental Council, Harrisburg, Pa., for papers and further information.

SOUTH DAKOTA EXAMINING BOARD.

The South Dakota State Board of Dental Examiners will hold its next regular session for the examination of applicants for license, at Aberdeen, South Dakota, June 9th, beginning at 1:30 p. m. All applicants will be required to insert at least two gold fillings, and such other work as the Board may require. Besides the regular operating instruments, each candidate is required to bring a bridge of not less than four teeth, including one Richmond crown and one molar shell crown, invested, ready for soldering. Application must be made to the Secretary at least one week before examination takes place.

G. W. Collins, *Secretary,*
South Dakota State Board Dental Examiners.

TENNESSEE STATE DENTAL ASSOCIATION.

The Tennessee State Dental Association will hold its thirty-seventh annual meeting at Jackson, Tenn., May 26, 27, 28, 29, 1904. A cordial invitation is extended to all ethical practitioners of the dental profession to attend.

R. Boyd Bogle, *President,*
Nashville, Tenn.
J. T. Crews, *Secretary,*
Jackson, Tenn.

JOINT CLINIC.

The joint clinic of the California State Dental Association and the Alumni Association, Dental Department, University of California, will be held May 16 and 17, in San Francisco.

Dr. Hart J. Goslee, of Chicago, will give a series of clinics on porcelain. Dr. Henry A. Baker, of Boston, will give a series of clinics on orthodontia and the Baker anchorage, and a large local clinical program is being arranged.

All the leading manufacturers have signified their intention of making an exhibit of their products and the local dealers will also be represented.

This season is expected to surpass any one previously held in this State.

AFTERMATH

PERSONAL AND MISCELLANY.

Dentist Bankrupt.—Dr. W. H. Reber, Chicago, has been adjudged a bankrupt in the United States Court.

Goes to Monroe, Ga.—Dr. W. T. Shannon, Elberton, Ga., has moved to Monroe for the practice of his profession at that place.

Held Up by Robbers.—Dr. J. C. Ferrell, Chicago, was held up by footpads March 30th and relieved of about $300 in money and valuables.

A Dentist Postmaster.—Dr. E. Lee has been installed as postmaster of Iona, Utah. He has not given up the practice of dentistry, however.

New Member for State Board.—Doctor Oakman, Detroit, Mich., has been appointed a member of the Michigan State Board of Dental Examiners.

Accidentally Killed.—By the overturning of a load of furniture he was moving, Dr. C. T. Hart, Osborne, Kan., was caught beneath and crushed to death.

Fined for Illegal Practice.—E. G. Thompson and E. C. Phelps, Tacoma, Wash., were fined $50 each and costs March 14th, for practicing without a license.

Income Too Small.—Because he was unable to earn more than $200 a month, Dr. William O. Gray, of San Francisco, committed suicide by inhaling illuminating gas.

Painful Accident.—Dr. P. W. Bard, Bardstown, Ky., while handling a revolver, accidently discharged it, the ball passing through the lower part of his leg, inflicting a painful though not serious wound.

Waterloo (Ia.) Dental Club.—This new society was organized March 10th and Dr. J. G. Hildebrand elected president, Dr. E. E. Peek, vice-president, and Dr. F. C. Blanchard, secretary and treasurer.

Has Given up Dentistry.—Dr. H. Van Antwerp, Mt. Sterling, Ky., has retired from the practice of dentistry and will devote his

attention to the superintending of his large stone quarry in Farmers, Ky.

A Deserved Honor. At the University-Day exercises in Philadelphia, February 22d, the honorary degree of Doctor of Laws was conferred upon Dr. James Freeman by the University of Pennsylvania.

Chicago Dental Society Officers Elect are: T. L. Gilmer, president; C. N. Thompson, first vice-president; F. V. Yorker, second vice-president; Winthrop Girling, recording secretary; A. E. Morey, corresponding secretary; C. P. Pruyn, treasurer; J. H. Woolley, librarian.

Married.—Dr. J. B. Leonard, Jackson, Miss., to Miss Lillian Churchill; Dr. H. C. Darrah, Cleveland, Ohio, to Miss Mabel Hall, Belvidere, Ill.; Dr. T. J. Mason, Twin Bridges, Mont., to Miss Effie Knowles, Sheridan, Montana; Dr. G. A. Gehbe, Oshkosh, Wis., to Miss Rose Learie; Dr. A. G. Able, Easton, Pa., to Miss Minette Lynne, New York.

British Army Dental Surgeons.—From April 1st, eight dental surgeons, who will be required to devote the whole of their time to army work, will be authorized for duty with the troops in the United Kingdom. They will probably be stationed at Aldershot, Devonport, Cork, Edinburgh, Portsmouth, Dublin, Colchester and Woolwich.—London Leader.

Leaves Dentistry to Take Charge of Apple Farm.—Dr. C. E. Crouch, Rock Island, Ill., has closed his dental office and gone with his father to assume the management of a 100-acre apple orchard which they have purchased in the Ozark mountains in northwestern Arkansas. The family will follow later. Dr. Crouch expects to abandon the practice of dentistry.

State Board Members.—Dr. C. R. Taylor, of Streator, Ill., has been appointed a member of the Illinois State Board of Dental Examiners, succeeding Dr. L. Rowley, Chicago, who resigned. Governor McBride has appointed Dr. C. S. Irwin, Vancouver, and Dr. E. B. Egers members of the Washington State Examining Board. They succeed Dr. M. D. Thurston and Dr. G. W. Stryker, whose terms had expired.

Burglars Still Active. The Harvard Dental Offices in Minneapolis were recently robbed of $100 worth of material and instruments. Dr. C. H. Sherman, Columbus, O., suffered a loss of about $30 by thieves. Dr. F. A. Peak, Hot Springs, Ark., loss about $75; Dr. J. M. Keagy, San Pedro, Cal., loss $100; Dr. J. J. McGaughin, Brooklyn, N. Y., had about $2,500 worth of jewelry and other valuables stolen from his residence.

Seventh District Dental Society, New York, elected the following officers for ensuing year: President, Dr. L. S. Goble, Rochester; vice-president, Dr. C. C. Bachman, Waterloo; recording secretary,

Dr. C. F. Bunbury, Rochester; corresponding secretary, Dr. G. G. Burns, Rochester; treasurer, Dr. LeRoy Requa, Rochester; delegates to state society, Drs. C. F. Bunbury, Rochester; C. W. La Salle, Rochester, and C. J. Barber, Auburn.

Loss by Fire.—C. H. Hubbard's Dental Depot, Winnepeg, Manitoba, burned, causing $30,000 loss. Doctor Maskery, Sabula, Ia., burned out March 13th, and seriously injured in effecting his escape from burning building. Dr. J. E. Frenette, Fargo, N. D., burned March 7th; insurance covered loss. Drs. Seehase & Werneche, Manitowoc, Wis., burned out March 10th, loss $1,800; insurance, $1,050. Doctor Vaughn, Chicago, March 11th, loss $300.

Cause and Effect.—It is said that Dr. Weir Mitchell, returning late from a party in a neighboring city once, awakened his sister to tell her what he thought was too good to keep till morning. A lady had been introduced to him, and, considering him a scientific man, wished to direct her conversation accordingly. "Doctor," said she, "don't you think the cause of so much sickness is the want of Sozodont in the air?"—Philadelphia Ledger.

Memphis Dental Society.—Permanent organization of this society occurred March 31st. The following permanent officers were elected to serve one year: Dr. J. L. Newborn, president; Doctor Turner, vice-president; Dr. R. Watson, secretary and treasurer. The organization is for the purpose of promoting the interests of the profession and bringing about a closer professional and social fellowship and maintaining the highest ethical dignity of the dental profession. There will be monthly meetings at which papers treating subjects of interest and value to the profession will be read and discussed.

Red River Valley Dental Association.—The orgaization of this society took place at Grand Forks, Dak., March 22d. The following officers were chosen: Dr. W. A. Robertson, Crookston, president; Dr. J. E. Argue, Red Lake Falls, vice-president; Dr. J. F. Boles, Crookston, secretary; Dr. S. Rowan, Hillsboro, N. D., treasurer. The following board of directors were elected: Doctor Frazee, Grand Fords, N. D.; Doctor Laning, Thief River Falls, Minn.; Doctor Bell, Minto, N. D., and Doctor Penney, Stephen, Minn. A committee on membership was selected, comprising the following: Doctors Jachning, Fertile, Minn.; Bell, Minto, N. D., and Stanton, of Cass Lake, Minn.

Dentist Leaves $3,000 to Generous Woman.—In the will of Henry J. Desaxe, a dentist, who lived in New York, filed for probate March 7th, there is a bequest of $3,000 to Miss Jennie McConnell, of Manhattan, as a reward for having offered to lend the deceased money at a time she supposed him to be in dire need of it. In making the bequest Mr. Desaxe wrote the following: "I give and bequeath to my dear friend, Miss Jennie McConnell, the sum of $3,000. This bequest is made for the deep appreciation of her friendship and kindness when, some years ago, being ill and contemplating taking a va-

cation, she offered to loan me every dollar she had, being under the impression that I could not afford the expense of the trip I contemplated. The extreme kindness of that offer made a deep impression, and the bequest is given to help a good, noble, moral and self-supporting woman when old age shall have come." Desaxe died March 4th.

Vermont State Dental Society. At the twenty-eighth annual meeting of the Vermont State Denal Society held at Montpelier, March 16-18, 1904, the following officers were elected for the ensuing year: President, Dr. H. Burbridge, Woodstock; first vice-president, Dr. Geo. F. Barber, Brattleboro; second vice-president, Dr. Geo. O. Mitchell, St. Albans; secretary, Dr. Thomas Mound, Rutland; corresponding secretary, Dr. Grace L. Bosworth, Rutland; treasurer, Dr. W. H. Munsell, Wells River; executive committee, Dr. J. Churchill Hindes, Vergennes; Dr. C. H. Kent, Barre; Dr. Harry F. Hamilton, Newport; state prosecutor, Dr. J. A. Robinson, Morrisville; Dr. John F. Dowsley, of Boston, Mass., and Dr. Henry McManus, of Hartford, Conn., were elected honorary members of the society.

The next meeting will be held in Rutland, the third Wednesday in March, 1905.

Death.—Dr. H. C. Gill, Rockford, Ill., fell dead April 5th from heart trouble. Dr. Chas. Sovereign, Chicago, died of gastric ulcer, March 25th; he was 54 years of age. Dr. J. Coleman, Canaan, Conn., died at the age of 74 years. Doctor Noble, of Belle Plaine, Ia., died in New Mexico, of consumption. Dr. G. E. Fisher, Red Oak, Ia., shot and killed himself March 25th; ill health the cause. Dr. D. A. Nash, Biloxi, Miss., accidentally shot and killed himself March 27th. Doctor Beers, Seattle, Wash., formerly of Milford, Iowa, is dead. Dr. Thos. O'Donnell, Boston, is dead. Dr. J. C. Emmerling, Milwaukee, Wis., died suddenly March 14th. Dr. S. E. Emery, of West Newbury, Mass., died on the steamer Caracas en route from Porto Rico to New York; he had been on a pleasure trip. Dr. Josiah K. Niley, Springfield, Mass., died March 6th at the age of 52 years. Dr. I. P. Wilson, Burlington, Ia., dropped dead March 9th at the age of 64 years. Doctor Dewey, of the Dental Department University of Iowa, died March 28th.

Traveling Dentists Do the People. The people of Warren, Ill. have real occasion to denounce the actions of two pretended traveling dentists, who located in that city some six weeks ago and posed as first-class dentists who would do dental work at one-half the price charged by local dentists with satisfaction guaranteed. They represented themselves as being members of the Harvard Dental school and gave their firm name as Ladd & Hawkins. They had a smooth, well-kept professional appearance and really had a fair knowledge of dentistry.

These suave gentlemen took up their living quarters with Landlord Clauer, at the Warren Hotel, and made many purchases of

various kinds of goods throughout the city. They appeared to be good fellows, and prosperous, as a result of which the dealers promptly delivered the goods ordered. When ordering goods they always requested that the bill be sent with the goods, but at the time they always had some plausible excuse for not liquidating at that particular moment.

On March 25th they were mysteriously absent from the table at the hotel and finally Landlord Clauer began an investigation. He found the room they occupied locked. He at once proceeded to gain an entrance and discovered that the men had left a trunk there as an evidence that they would return. Being satisfied that his guests had "flown the coop" Mr. Clauer broke open the trunk and found therein one old, dirty necktie. Mr. Clauer is out about six weeks' board for the two men and the citizens of Warren are said to be short in the neighborhood of $400.00. In taking their unceremonious departure it appears the men hired a livery rig at Miner's barn and drove to Gratiot, where they boarded the Milwaukee train for Chicago. Later they telegraphed Liveryman Miner where he could find his team, allowing him to pay the cost of the telegram. They were very clever and smooth—just enough so to teach people that it is policy to deal with local practitioners in dental work—or almost anything else.—Freeport Journal.

American Dentists in France—An Important Letter and Decision.—The Dental Summary for March has just reached me and I find a paragraph concerning me, headed "American Dentist Fined."

There is a mistake in a minor detail—my name is incorrectly spelled.

The important mistake is the point on which the whole case turns and the one which renders it important and interesting to all American dentists.

The real situation here is that a large body of French dentists have organized with a view to driving the American dentists out of the French field. Their plans of operation seem to be to obtain as much prohibitive legislation as possible, and to throw discredit, if possible, on all the American dentists practicing on French territory.

Some of our American confreres in Paris abandoned the use of their title of Doctor on account of the menaces of this syndicate without any self-defense. A very few of them did not indicate the foreign origin of their title, but the others all had some indication of American origin. Those dentists who resisted the first menaces of the syndicate were attacked in the lower court, where all lost the case.

The French law reads that in the case of foreign titles the title of Doctor cannot be used without indicating the foreign origin of the title.

I never used my title of Doctor without indicating its Philadelphia origin, and that even before the law was passed. The syndicate of

French dentists who attacked me did not maintain the contrary, but they brought the action on the grounds that I did not sufficiently indicate the origin of my title. Though the law provides no formula of indication, and through the indication of my foreign title could not be, and never in 32 years has been, misconstrued or misunderstood, the syndicate won the case in the lower court, as they had all previous cases against American dentists. The judge, however, throughout the trial and in his decision emphasized repeatedly that my personal integrity and professional honorableness were unquestionably established, and he even delivered himself of an unexpected panegyric on the superiority of American dentists. I carried the case up to the Court of Appeals, which reversed the first judgment and gave a decision that "in law and in fact" the syndicate had no action against me, and they were condemned to the costs. The decision is very important because now all the foreign dentists who have the right to practice here can use their foreign title of Doctor with a reasonable indication of its origin.

The entire list of American dentists in Paris and the provinces were to have been attacked by the syndicate for the use of the title Doctor before their names, no matter how elaborate the explanation of the origin of the title which followed after the name, in the event of their winning the case against me. They hoped to render it impossible for an American dentist to call himself "Doctor W. W. Dash, of such and such a Faculty of New York" or elsewhere. They wanted to reduce us to " W. W. Dash, Doctor of such and such a Faculty of New York," etc.

I am glad that, with the aid of my very able and enthusiastic legal counselor, I have been able to keep in its place the title the good old Philadelphia Dental College conferred upon me.

Our French confreres of the syndicate were all under obligations to some of us for gratuitous instruction in their profession. Those who did not vote for the action against us all remained passive during this campaign.

C. V. DuBouchel, D. D. S.,
8 B'd des Capucines, Paris.

Recent Patents of Interest to Dentists.—

752378 Casting impressions of the teeth and mouth, Wilber M. Dailey, New York, N. Y.

753128 Dental plate mold, Owen E. Driscoll, Charlottesville, Va.

753679 Adjustable dental impression-cup, John C. Davis, Reinbeck, Iowa.

753529 Dental bridge, Frederic Teague, Oakland, Cal.

754841 Tooth-cleaning implement, George C. Bessonet, Channing, Texas.

Copies of above patents may be obtained for ten cents each by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

DENTAL COLLEGE TEACHERS' CONTRIBUTIONS

FILLING MATERIALS AS BARRIERS TO BACTERIA.

BY R. H. VOLLAND, D. D. S., IOWA CITY, IOWA.

Instructor in the Dental Department, University of Iowa, Iowa City, Iowa.

PAPER I—GUTTA-PERCHA.

Through the kindness of Dr. G. V. I. Brown, of Milwaukee, I was permitted to read a manuscript copy of the paper Dr. A. E. Webster, of Toronto, Canada, read before the Chicago Odontographic Society in February, 1903, entitled: "Temporary and Permanent Fillings as Barriers to Bacteria." Doctor Webster's paper was published in *Dental Review* of April 15, 1903, DENTAL SUMMARY, May 1, 1903.

At the suggestion of Doctor Brown, and with the results obtained by Doctor Webster in his laboratory experiments in mind, I have conducted the following series of experiments: This paper, the first of a series, embodies only those results obtained with red gutta-percha as a filling material. In the near future I hope to give the results obtained from cement, amalgam, gold, and temporary stoppings.

If this small number of test fillings are not sufficient to establish absolutely the fact that gutta-percha is a barrier to bacteria, they at least point very strongly to it, and give rise to several very interesting questions which have been discussed, more or less, with varying results as to their settlement; and as the questions are scientifically and practically of paramount importance, it will do no harm to raise them again.

The results of my experiments cannot be expected to coincide with those of Doctor Webster, since his were performed by the use of glass tubes filled with the material to be tested—purely laboratory experiments—while my test fillings were made in liv-

ing teeth, and so, being subjected to the complicated conditions of the buccal cavity and the great element of vitality. In selecting a tooth to be filled, the only prerequisites considered were that it have a live pulp and a cavity so located that the rubber dam could be adjusted.

The condition of the mouth as to caries and cleanliness was not taken into consideration, because the object of the experiment was to get a general deduction. The patient was instructed to pay no attention to the filling but to treat his teeth and mouth as was his custom.

S. S. White base-plate gutta-percha was used in all these fillings. The method of making the fillings was as follows: The gutta-percha was cut up into small pellets and softened by heat on a porcelain slab until they were just soft enough to adhere to each other and to the walls of the cavity. The cavity was then filled by building in these pellets. Each pellet was thoroughly packed to place by means of ball and flat burnishers, with a special view of getting the gutta-percha well adapted to the lateral cavity walls. The excess filling material was carefully trimmed away in the orthodox manner with a warm instrument.

In removing any of the fillings to be tested these precautions were taken. The rubber dam was adjusted to the tooth, or teeth as the case required, and then the teeth in the dam and the dam itself were thoroughly sterilized by a 1.5000 solution of $HgCl_2$. The excess of the solution was then carefully taken up with sterilized cotton. Now a slant tube of agar-agar was inoculated from the rubber dam and one or two such tubes were inoculated from the surface of the tooth and the surface of the filling to be removed. A previously sterilized platinum wire was used to make the inoculation. The wire was rubbed over the surface of the dam, or filling as was desired, and then the wire was rubbed on the surface of the media. Let these tubes be known as "control tubes."

Now, with sterile instruments, the filling was carefully removed and several tubes inoculated by the various portions of the filling being dropped on the slant of agar-agar. When the whole filling had been removed, an inoculation was then taken from the bottom of the cavity. The platinum wire was here used and the same method pursued as before the removal of the filling. All these tubes, both control tubes and those inoculated

from the filling and the cavity, were placed in a Bausch & Lomb incubator and examined for growth at the end of twenty-four and forty-eight hours. It was not the intention to differentiate the micro-organisms in the infections that might appear in the tubes, so no differential diagnosis was attempted. The presence or absence of an infection was all that was looked for; the question to be settled was, "Is gutta-percha a barrier to bacteria?" without reference to the kind of bacteria.

The following ten fillings were inserted with the ordinary means of cavity sterilization. The rubber dam was adjusted; the teeth in the dam wiped and dried with alcohol; the cavity prepared; and, when finished, washed and dried with alcohol and the fillings inserted following the method previously outlined. These fillings were in place various lengths of time, as will be seen by reference to the list, and were then removed, using the precautions noted above. As I do not insert, and have no means of finding out that Nos. 8, 9 and 10 of this series were inserted with any more than ordinary means of cavity sterilization I have placed them in this list. But it is possible that even the rubber dam was not used when the fillings were made, and this gives a further reason for these fillings coming in Series I.

SERIES I.

Filling No.	Length of Time Inserted	Control	Filling
1	22 hours	Not Infected	Not Infected
2	23 hours	Not Infected	Not Infected
3	3 days, 5 hrs	Not Infected	Not Infected
4	4 days, 1 hr	Not Infected	Not Infected
5	6 days, 3 hrs	Not Infected	Not Infected
6	8 days, 6 hrs	Not Infected	Not Infected
7	3 months	Infected	Not Infected
8	18 years	*1 tube in 5 showed growth	Not Infected
9	18 years	Not Infected	Not Infected
10	12 years	Not Infected	Not Infected

The following seven fillings were inserted under the most sterile conditions possible to obtain. The rubber dam was carefully adjusted on the tooth to be filled; the cavity was very carefully prepared; and the tooth and cavity and dam were zealously

*Probably this was accidental infection from air, as growth was characteristic of hay bacillus, although a slide was not made of it. But the infection even of hay bacillus is possible from the mouth.

sterilized with $HgCl_2$ 1-5000; the excess solution carefully taken up with sterile absorbent cotton. Control tubes were then taken from cavity, tooth, and dam. The filling was inserted and finished with sterilized instruments, and finally a control was taken from the filling. These fillings were allowed to remain for various lengths of time and then removed with the same precautions as to sterilization as in removing the fillings in Series I. Control tubes were taken from the dam and tooth before removing the filling just as in Series I. Tubes were inoculated with pieces of the filling and from the cavity.

SERIES II.

Filling No.	Time Inserted	Control Tubes at Time of Insertion.	Control Tubes at Removal.	Inoculation from Filling and Cavity.
1	3 days, 6 hrs.	No infection	No infection	No infection
2	36 days, 23 hrs.	No infection	Growth	Growth
3	36 days, 23 hrs.	No infection	Growth	No infection
4	41 days	No infection	No infection	No infection
5	3 months	No infection	No infection	No infection
6	3 months	No infection	No infection	Growth
7	14 weeks	No infection	No infection	No infection

In Series I, it is noticeable that in all control tubes a negative result as to infection was obtained except in Nos. 7 and 8. As these are control tubes taken from the rubber dam and teeth before the removal of the filling, these two fillings have the same scientific value as the other eight fillings of this series, since none of the tubes from the fillings show any infection. Again, the length of time these fillings were in place ranges from twenty-two hours to eighteen years, and should give plenty of time for bacteria to penetrate to the bottom of the cavity and begin activity.

There is one question that may arise here, concerning the first seven fillings, and these experiments do not settle it. If, at the time these fillings were inserted, the cavity was infected, when did the infecting bacteria lose their activity? Since the first filling examined was in place twenty-two hours and no growth from the filling, it is reasonable to suppose that the original infecting bacteria surely lost their virulence before twenty-two hours had elapsed. Of course it is possible that the alcohol used in washing the prepared cavity was sufficient to devitalize the bacteria there present, but the probability of such

being the case is very doubtful, since the alcohol was not in contact with the inner surface of the cavity for a sufficient length of time. But the alcohol and the gutta-percha may, together, account for the devitalization. The only way the question can be answered is by a series of experiments in which the lengths of time the fillings are in place must range down from twenty-two hours, and a control or test culture made from the cavity before the filling is inserted to establish the fact whether living bacteria were present in the cavity at the time the filling was inserted. But it matters not, to us, whether there were living bacteria present at the time the filling was inserted, or whether they were destroyed by the alcohol; the fact remains that there were no bacteria under the filling when it was removed and the object of the experiment was to discover whether or not gutta-percha permits bacteria to enter a cavity properly filled with it.

In Series II. filling No. 2 cannot, of course, be considered, since there was infection in both control tubes and tubes from the filling. These results are probably due to faulty laboratory technic. Filling No 3 is of scientific value, as the control tubes only were infected. Filling No. 6 would tend to disprove the results of my earlier experiments, but that No. 5 was also inserted for three months and shows no infection in any of the control tubes or filling inoculations. So the results of filling No. 6 must be accredited to faulty or careless technic, and be left out of consideration.

This leaves five fillings of this second series that can be of scientific value.

With the precaution of a perfect cavity sterilization before the gutta-percha filling was inserted, as is shown in the results from the control tubes in the first column of this last list, another fact is added to substantiate the argument that gutta-percha is a barrier to bacteria.

From a purely clinical standpoint, gutta-percha has been recognized by the dental profession as one of its best tooth preservers when the prevention of the recurrence of caries alone is considered. Of course the location of the cavity and the wear of mastication may contraindicate a permanent gutta-percha filling, yet it is a noticeable fact that gutta-percha, even in occlusal cavities, preserves the teeth as long as the cavity is reasonably well plugged. Then, again, it is a common occurrence, in prac-

tice to find a root has been nicely filled with gutta-percha, but crown of the tooth broken off. The end of this root and root filling may have been exposed even for years; possibly the root may be locked between the adjacent crowns of badly-decayed teeth and so located as to never be thoroughly cleaned by the brush, flow of saliva, mastication or tongue, yet the caries that attacks the exposed end of this root gives practically a regular destruction of the root. I admit that the caries may extend a little more deeply along the gutta-percha root filling but nowhere near in proportion to what it ought, if, as Doctor Webster says, gutta-percha is not a barrier to bacteria; for it is readily seen that if gutta-percha did not form a nearly perfect dam, it would be an ideal place for the propagation and activity of bacteria, and caries would be decidedly the most marked along the root filling—away out of proportion to that of the remainder of the exposed end of the root. Again, the ravages of decay are much more marked in dentine than in enamel or cementum, so the depth along the root filling is again accounted for. In this series of experiments, it was my good fortune to be permitted to remove and test three gutta-percha fillings (8, 9, 10 of Series I) which had been in place over eighteen years, and the underlying dentine was found to be as hard and clean as that of a newly-prepared cavity.

IMPRESSIONS OF THE MOUTH.

BY A. O. HUNT, D. D. S., OMAHA, NEBRASKA.

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At this, nearly the beginning of the various details which enter into the construction of an artificial denture or dentures for edentulous mouths, too many are careless or indifferent to those essentials which lead to a successful result. Further it may not be wrong to say that too little regard is paid to the anatomical and physiological conditions that are always present as the basis of thought and study for the application of whatever mechanical principles are necessary to the process. The purpose of this article will be to discuss the basal principles that must be observed in order to treat these cases with proper degree of care to obtain results that are actually prosthetic in character.

Considerable has been written and demonstrated of the mechanics of this part of the process to probably cover all that is necessary. Only as much of this will be considered as may be important to emphasize other points.

There is no desire to overlook the importance of such consideration, but there is so much that might be said upon all that relates to this part of prosthesis that it could not be contained in one journal article.

There is not the smallest detail in the procedure that does not have a most important bearing and effect on the final results. The recognition and study of these details is worthy of the best minds and when one enters this field he must bring to it a working knowledge of something more than mechanics. It is the artist, the anatomist, the physiologist, who must be the designer, the director, the all in all, which the mechanic must follow and execute under such guidance.

The purpose of the impression of the mouth is something more than securing a model upon which a good arrangement of the teeth, a good adaptation, or a good occlusion or articulation of the teeth may be obtained, essential as they are. If all this is correct and the features are not restored to as good or better condition than once prevailed, prosthesis does not exist. Although this may seem to be the final result, yet it is the first consideration in taking an impression. As before stated, the *smallest* detail in the procedures has an important bearing on the final results.

In the loss of the natural teeth, terrible havoc is wrought in the expression of the human face, which is practically all of its expression.

The causes of this change are many and important. First, the loss of the cuspid teeth, both superior and inferior, destroys at once the actions of the muscles of expression in their relation to the orbicularis oris muscle. The further resorption of the eminences over the roots of these teeth preclude the possibility of a complete restoration to normal conditions. In passing it might be well too suggest a practice I have long followed in preserving the roots of these teeth *in situ* by filling and capping on a level with the gum tissue. In the development of the superior cuspids their position is underneath the alæ of the nose above the line of incisors, when the development is completed the apices of the roots still may be felt in that position. The canine

eminence is continuous with the form of the root and extends so much above the union of the lip tissues and the gum tissue underneath the orbicularis oris muscle that when this eminence is gone it is impossible to secure an impression of the parts sufficiently high up to make the restoration complete.

More than this, the fibers of the orbicularis muscle ride over these eminences much as a rope runs through a pulley-block, controlling in this way the movement of all the muscles of expression.

Another change occurs in the posterior part of the mouth in the dropping down of the buccinators, carrying with them the whole tissue of the cheeks. The resorption of the alveolar border aggravates this and causes a falling inward of the tissue. The class of muscles known as the muscles of expression are all affected by this change, particularly at their insertion in the orbicularis oris. One of the difficulties met with in the retention of the upper denture is that they have a tendency to drop down or away from the palatal and ridge portion of the mouth.

In my experience this is not always due to a lack of close adaptation to the mouth, but rather to a faulty impression of the other parts relating to the position and function of the muscles.

The muscles of expression entering the orbicularis oris from above are all elevating muscles and have no motion downward except as the action may be controlled by the depressor muscles of the inferior portion which enter the orbicularis oris muscle from that direction and only one of these latter have any elevating function. It is almost an impossibility for any one of these muscles of expression to be in motion that does not at the same time produce some movement in all of the others.

So, then, if all of these muscles are replaced in a normal condition, only a normal action of them would be possible. A movement in the superior muscles would not at any time be downward except as they may be influenced by the inferior muscles. When these latter are in normal relation there would be only one on the exterior surface that could act as an elevator except as they are in turn influenced by the superior.

A portion of the muscles of mastication need further consideration as to their position and relation to our subject.

The mylohyoid muscles and their attachment to the mylohyoid ridge. The hyoglossus, the genioglossus, from their attachment to the genii tubercles.

The lingualis in its relation to the tongue and lingual border of the mandible at the medium portion in full function or activity will act unfavorably upon a denture unless this is clearly known at the time when the impression is taken.

A careful examination should be made of all that can in any way be an interference in retaining a denture in position when the functions of the different parts of the oral cavity are in action, as well as to utilize any muscle or portions of muscles that may assist in the retention of the same. The latter relates more to the final shaping or finishing of a denture than to taking of the impression.

While anatomy teaches us the location of all these parts, the universal law of variation and *not* constancy makes the knowledge only general in its character.

It will be necessary to reduce general laws and principles to a specialty in considering *each* case. The importance of a careful examination of the parts especially in relation to each other, whether they are performing full or only part of the function expected of them.

It may not be out of place to consider some methods to secure the best results. They are not of as much importance as they are generally considered to be. As a successful method is often more individual than general, yet with the principles rightly understood many different methods will produce equally good results.

A method of examination for the upper and exterior of the lower jaw should first be lifting the lip upward, outward, and downward, and moving the muscles in every direction to their fullest tention, noticing the changes that follow as they are placed in different positions. A careful digital examination should be made of all the soft and hard parts of the mouth and a record made not only of their location but the form. This may be done after the model is secured.

An impression tray for the upper should be well adapted to the parts, that in securing the impression the margins shall be full and strong enough to carry back to their position the fallen muscles particularly in the buccinator region.

Should the ordinary impression tray not be sufficient, one may be made from as good a model as can be obtained otherwise. The model to be trimmed high up over the cuspid region, also at

the buccinator region in the posterior part of the mouth, or at other places as indicated by the examination of the mouth.

The made tray—of modeling compound, gutta-percha, ideal base-plate, etc.—should be constructed so that at all places about the periphery of the denture the margins may be formed to rest in soft tissue.

While the impression plaster is in position and sufficiently plastic to retain the impression made, have the patient open the mouth to the fullest extent, meanwhile holding the tray firmly against the palatal portion with the fingers out of the way of the full action of the anguli oris muscles, while in position grasp the corners of the mouth and move the attachments of these muscles backward and forward to accentuate their depression and movement at the margin of the impression. Also manipulate the anterior freanum in the same manner. When the perfected model is ready, the margins for the denture will be distinctly indicated except at the posterior palatal margin. This should *always* be firmly embedded in soft tissue.

The same care should be exercised in examining the parts for the lower impression. If a good impression is taken in *pure beeswax* first, the margins on the outside made full and deep with the tongue protruding from the mouth, a sufficiently good impression may be made from this for a tray when the wax is chilled, and the margins trimmed in such a way that the full action of the muscles, as found by the examination may be had. The impression may now be taken in plaster of Paris.

When all is in firm position in the mouth, *at once* have the patient protrude the tongue out along the handle of the tray. Constantly urge him to put it out further, *further, FURTHER.* Open the mouth wide and manipulate the anguli oris muscles as before, pull the lower lip upward and foreward without allowing the tongue to drop back on the tray.

In this procedure the fullest action of the mylohyoid and other muscles of the interior and floor of the mouth are reproduced in the margin of the impression.

If the denture conforms to this there will be no lifting of the denture or guessing as to its location.

In opening the mouth fully, the extent of the action of the anguli oris muscles and the attachment of the buccinator will be defined.

The use of these principles should be continued on to the compensation made in the models for relief of hard parts and the resting upon soft tissues to secure perfect adaptation. The teeth must also be arranged, especially the cuspids and bicuspids, so as to give the normal action to the muscles as they move over them.

The final shaping of the denture, whether made on plastic or metal base, should be such that the buccinator at the posterior portion and the orbicularis at the anterior may grasp the denture in a firm grip.

The one essential feature in getting the impression is in forcing upward or downward the union of the cheeks and lips with the gum tissue to a normal position which will carry with it the fallen and displaced muscles.

In ordinary cases not much more fullness will be required than what is secured by the correct arrangement of the teeth in their relation to the lips and face, which is a positive one. Reproduce in form at the other margins such shape as the mouth shows when the natural teeth are in position so that the muscles will adapt themselves to a normal form instead of an artificial one.

REGULAR CONTRIBUTIONS

OCCLUSAL ANCHORAGE OF PROXIMAL FILLINGS.*

BY RAYMOND J. WENKER, D. D. S., MILWAUKEE, WIS.

The extension of proximal cavities in the occlusal surface for the purpose of gaining access has been practiced for many years. This extension usually included a portion of the mesial or distal marginal ridge and was primarily intended for convenience, not for anchorage. The buccal and lingual walls were depended upon for anchorage. This was the most radical cutting in the occlusal surface generally practiced by the earlier operators, except when caries existed in this surface. In consequence of closer and more extensive clinical observation we have grown more radical in our ideas of cavity extension, not only in the occlusal surface but in the axial surfaces as well. These observations have led us to the conclusion that more radical cutting is necessary to prevent certain failures which have been frequently recognized. In the occlusal surface this radical cutting has taken the form of a step and is made for three purposes, namely: for convenience, for prevention and for retention. When we extend a proximal cavity in the occlusal surface to gain access and admit light, we have extended for convenience. Whenever a proximal cavity approaches a fissured or deep groove, in the occlusal surface we cut a step to include such a portion of that groove as to insure self-cleansing margins. This is "extension for prevention." A step cut in the occlusal surface for the purpose of anchoring a proximal filling is extension for retention.

THE OCCLUSAL STEP.

One of the frequent failures of large proximal fillings is a tipping of the occlusal end in a mesial, distal, buccal or lingual

*Read before the Wisconsin State Dental Association, 1903.

direction, resulting in leakage or total dislodgment. It is with the view of preventing this form of failure that many operators are now using the occlusal step for the purpose of anchoring all proximal fillings.

At no time in the knowledge of the author, has any one advocated a limitation in the use of this form of anchorage, to either the mesial or distal, upper or lower proximal cavities, but on the contrary there has been an unmistakable tendency in the opposite direction. A few writers have advocated the universal use of this step, arguing that it is necessary to prevent the tipping or dislodgment of proximal fillings on account of the great amount of occlusal stress exerted in mastication.

It is to this universal use of the step that I wish to direct your attention. I question the advisability of an anchorage step for all proximal cavities of bicuspids and molars.

We have all seen many proximal fillings slightly tipped or totally dislodged from their fastenings, but how many have taken the trouble to observe whether all proximal fillings fail, regardless of the side of the teeth they are inserted in, or whether some fail and others remain undisturbed?

LARGE PROXIMAL FILLINGS.

After some years of careful clinical observation I have arrived at the following conclusions, namely: Large proximal fillings having poor or no occlusal anchorage become dislodged or remain intact according to the strength of the buccal and lingual anchorage, and according to whether they are mesial or distal fillings. *In the upper jaw,* when such fillings have a poor lingual support, they usually become dislodged in a lingual direction, and mesial fillings having a poor occlusal retention generally tip in a mesial direction, while distal fillings usually remain secure. *In the lower jaw* the exact reverse takes place; large proximal fillings having a poor buccal support tip in a buccal direction and distal fillings having a poor occlusal retention tip in a distal direction, but mesial fillings usually remain intact.

FUNCTIONAL MOVEMENT OF THE LOWER JAW.

In explanation of this I will invite your attention to the functional movement of the lower jaw in mastication.

In viewing the movement of the mandible from an anterior position, the cusps are seen to describe a triangle. (Fig. 1).

For example, if a morsel of food is being masticated by the teeth on the right side, the first movement is downward and backward, describing one side of the triangle. This may be styled the releasing movement (Fig. 1 R). In this movement the condyles move slightly forward and downward on the inclined roofs of the glenoid fossæ. The only part of the jaw which remains stationary during this movement is the fulcrum, a point about fifteen millimeters below the articular surface of the condyles (Fig. 2 F)*. The second part of the triangle is described by a movement of the jaw to the right. This may be characterized the position movement (Fig 1 P). In this movement the

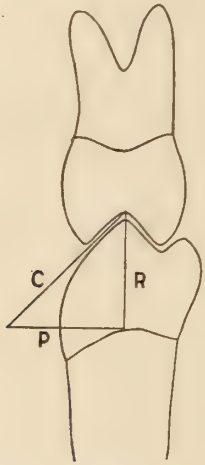


FIG.1

right condyle glides backward and upward,† and the left condyle forward and downward. The third part of the triangle is made by a movement back to the place of beginning, forming the hypotenuse. This may be designated the crushing movement (Fig. 1 C). In this movement the left condyle glides backward and upward and the right condyle slightly forward and downward.‡ The first contact or articulation of the cusps is that of the buccal cusps of both the upper and lower teeth on the right side, those on the left side barely touching as they glide into position until complete occlusion has taken place. The

*Doctor Walker, *Cosmos*, 1896.
†Doctor Walker, *Cosmos*, 1896, page 34.
‡Doctor Walker. *Cosmos*, 1896, page 573.

latter, or crushing movement, is the one to which I wish to direct particular attention, at this time, as it indicates the direction of the occlusal stress, and therefore should be carefully studied in order to determine its influence upon fillings.

While it is true that the angle of this crushing movement relative to the bucco-lingual axis of the teeth may vary with different food materials, it may not be alike on both sides in the same mouth, and it may vary in different individuals, still it must be conceded that the general direction of the stress as seen anteriorly, is gingivally and lingually against the upper teeth, and gingivally and buccally against the lower teeth.

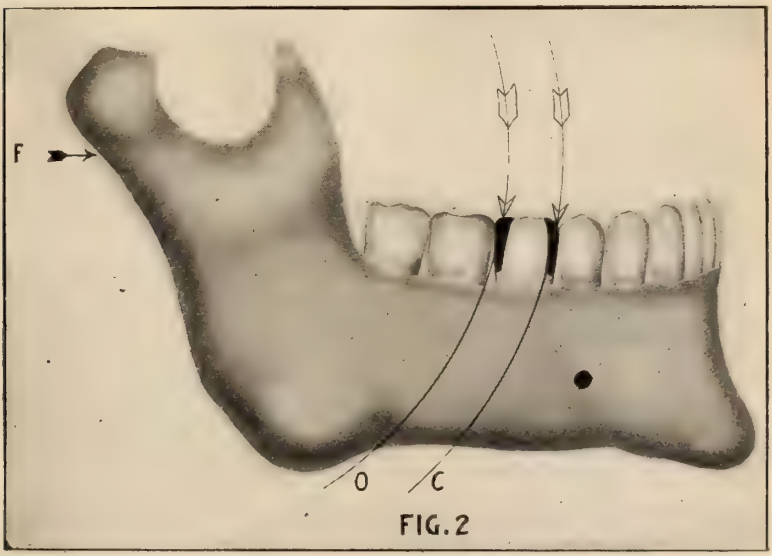
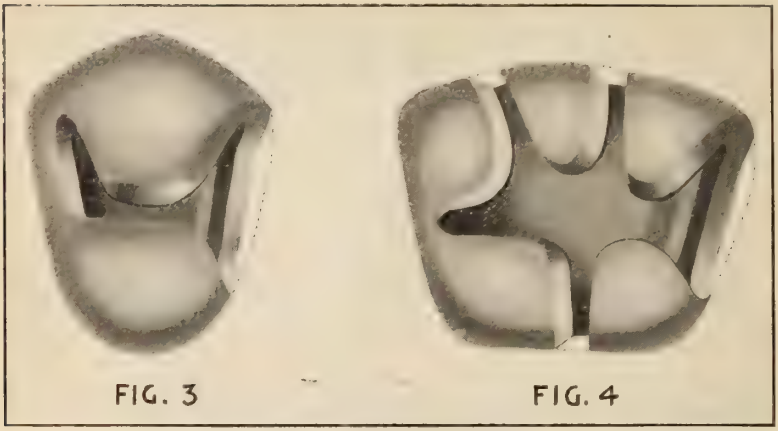


FIG. 2

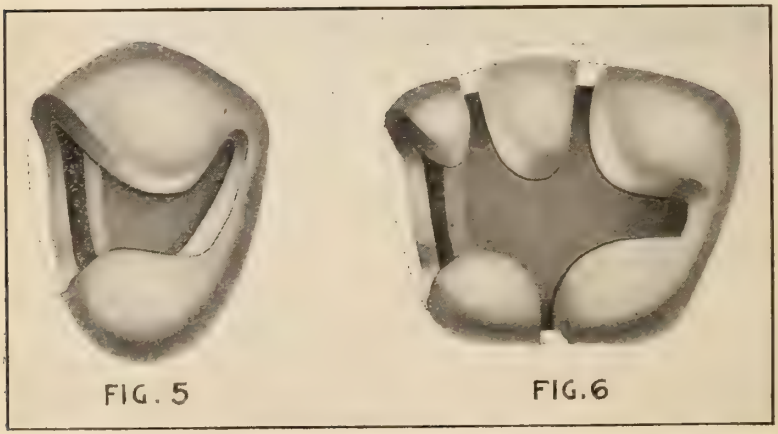
This accounts for the dislodgment of upper fillings in a lingual direction, and of lower in a buccal direction. The dislodgment of many proximal fillings which have been supposed to be due to the absence of occlusal anchorage, is more probably due to the absence or improper form of the lingual wall in the upper and buccal wall in the lower cavities.

If we view the crushing movement from the buccal side, it will be seen that the teeth describe the section of a circle (Fig. 1 C). The center of the circle is at the fulcrum of the mandible (Fig. 2 F). Therefore the general direction of the crushing stress, as seen from this side, is mesially against the upper



teeth and distally against the lower teeth. It is this direction of the stress that dislodges mesial upper fillings in a mesial direction, and distal lower in a distal direction. This statement is strengthened by the fact that the lower teeth glide slightly forward during the crushing movement.

It may be argued that as each cusp is wedge-shaped, and interlocked between the opposing cusps the direction of the crushing force would be necessarily at right-angles to their inclined planes. It is true that much force is exerted in these directions during the crushing of the ordinary foods, but not equally against mesial and distal inclines. The greatest stress is exerted against distal inclines of the upper and mesial in-



clines of the lower teeth, with the tendency of driving distal upper and mesial lower fillings into their cavities. The least stress is exerted against mesial inclines of the upper and distal inclines of the lower teeth and still, mesial upper and distal lower fillings fail most frequently. Therefore it is probable that dislodgment takes place by catching particles of hard substance in the food materials and by the excess of stress exerted during the forward gliding in the latter end of the crushing movement. For instance if a hard particle in the food, such as a seed were caught on a distal filling in the lower first molar and against the lingual cusp of the upper second bicuspid the tendency would be to tip this filling out of the cavity (Fig. 2 O). On the other hand, if a similar particle were caught on a mesial filling in the same molar, the tendency would be to drive this filling deeper into the cavity (Fig. 2 C).

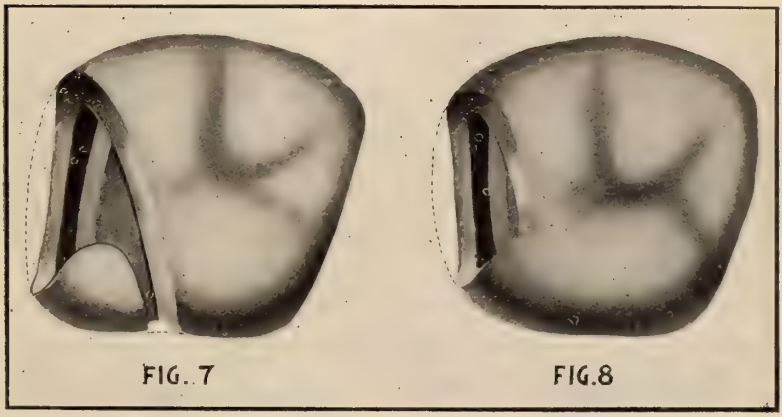
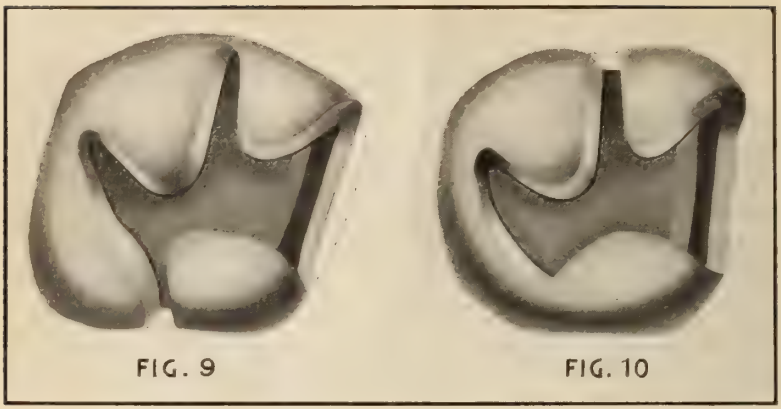


FIG. 7 FIG. 8

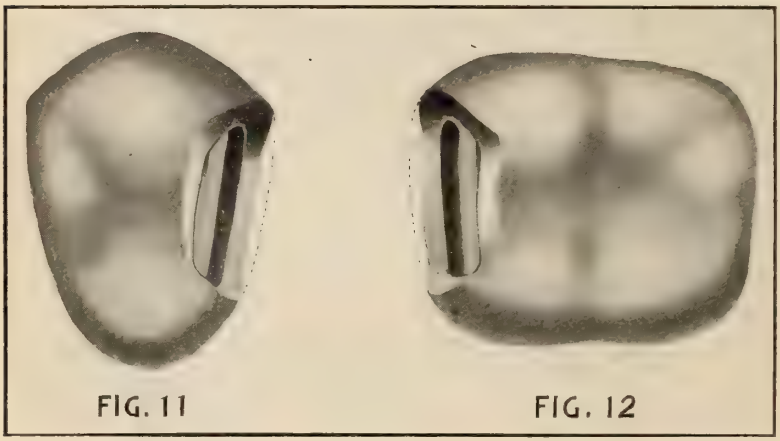
These hard particles are very noticeable in our food, because we exert considerably more force than is necessary to crush the food in which we find them. The cusps penetrate ordinary food and strike the opposing teeth with a perceptible force, and as this takes place during the forward and upward movement it is probable that many fillings are dislodged in this manner.

It should be noticed that while the direction of the occlusal stress has the tendency on the one hand of tipping certain proximal fillings out of their cavities, it also has the tendency on the other hand of driving certain proximal fillings deeper into their cavities.



The recognition of these principles calls for a more conservative treatment of distal upper and mesial lower cavities. In the preparation of these cavities in teeth the lobes of which have imperfectly coalesced on the occlusal surface, or the grooves are deep and angular, such grooves and fissures should be included by the extension of a step in this surface. But as this step is necessary only for the purpose of prevention, it should not be made so wide bucco-lingually as when made for retention (Figs. 3, 4, 5 and 6).

The difficulty encountered in the preparation and filling of distal cavities in upper molars on account of the posterior position of these teeth, justifies the formation of the step for conve-



nience. This step should be sufficiently large to include all of the distal fossa, and since the disto-lingual groove is generally sulcated, the extension should be continued to include all of the angular part of this groove (Figs. 7 and 8). These extensions, however should not be cut so radically as when made for retention in mesial cavities of the same teeth (Figs. 9 and 10).

We should conserve a still greater quantity of tooth substance in all distal upper and mesial lower cavities not requiring an occlusal step for convenience or prevention. However, a strong lingual wall in the upper and buccal wall in the lower cavities is necessary to prevent these fillings from being dislodged by the bucco-lingual direction of the stress (Figs. 11 and 12). In the absence of such lateral support an occlusal step is required for retention.

In conclusion I will say, first: that I believe it is advisable to extend the walls of proximal cavities in a gingival, buccal, lingual and occlusal direction, for the purpose of prevention and convenience, and second: to extend all mesial upper and distal lower proximal cavities in the occlusal surface for the purpose of retention, even though it may not be necessary to make such step for prevention or convenience. But I contend that we are not justified in sacrificing tooth substance in the formation of an anchorage step for the *retention* of distal upper and mesial lower fillings.

DISCUSSION.

Dr. Chas. L. Babcock, Milwaukee.—The principle which Doctor Wenker has stated, I think I should agree with. The point on which I think there might be any possible disagreement, would be as to when and under what conditions one would be justified in making this extenson for retention.

In many cases it is not necessary to make this extension for retention, and there again comes in the individual skill of the operator in making a perfect filling. However, to my mind that does not impair the study of the principles involved as developed in the paper.

Dr. E. O. French, Eau Claire.—I believe the matter of extension for retention is of subordinate importance. I think extension for prevention is the key-note of the whole thing. In extension for prevention we always have greater stress, but we know that very many times that when we have made extension for prevention without the thought of retention, we have found we have had much better success in saving the tooth than we have when we have made the extension for retention and not for prevention.

Dr. J. W. Lyder, Akron, O.—There is one little adjunct that I have found recently of great advantage—when I pick up a bur to put in the engine I feel the bur. I have been using dull burs. If you form the habit you won't break it very readily. The sharp bur will enable you to execute your work much more easily, especially striking in the spot. I sympathize with Doctor Maercklein when he says it is difficult to find instruments. I tried every agent passing through the country selling instruments; I tried some of the dental depots and was at a loss to find a plugger that stood at right angles. But if you get them you will never give them up.

Dr. E. O French, Eau Claire.—In regard to hand-pressure and the strength one has in his hand, I was surprised in testing the machine that Doctor Black had. It makes a great deal of difference how you hold the instrument in your hand, and what muscles you use in applying that force. If the operator will take a hand-plugger and hold it in the position he does the mallet, grasp your instrument around it in the same way, you can get great force, and you will be surprised. I very frequently change from the mallet to hand-pressure, and nearly all my patients say, "Please use the mallet. It is very much easier." I can strike just as fast as I can work my hand, and I can take the instrument any way, and I cannot begin to get the force. You can do the work just about as well with hand-pressure as with mallet if you can get the force right.

I am afraid to fill a tooth against a curved wall by hand-pressure.

Dr. C. H. Farrand, La Crosse.—This brings to my mind a question I have often asked myself. In gold work I use a very heavy blow, and when it comes to hand-pressure on certain walls, as the Doctor has just spoken of, I bring pressure on there until instinct tells me that if I use any more, something will give way. I can mallet the space, and when I have completed I have a very much stronger filling than I would have under hand-pressure. What is the cause? Do I get as dense a filling with the hand-pressure as with the mallet? With the mallet I feel secure; with hand-pressure I feel that I am breaking something.

Doctor Wenker, Milwaukee.—I do not know as this question appertains to the subject-matter of the paper. However, I will say that I believe we are more often deceived in the blow of the mallet than we are in the pressure of the hand. The rapidity and penetration of the blow is the point of danger. The mallet-blow being so very rapid, and not being controlled by the muscles of the hand and arms, it is really more deceiving than hand-pressure. The impact from hand-pressure is not penetrating but is expended upon the surface of the material, while with the mallet the force of the blow penetrates more or less deeply into the filling material, according to the rapidity of the blow and the hardness of the instrument through which the force is imparted. A lead mallet, for instance, gives an impact which expends itself upon the surface of the material, much the same as hand-pressure, while a

steel mallet gives a very penetrating impact, and therefore it is more apt to injure the underlying tissues. I have broken down more walls with the mallet than by hand-pressure.

DOCTOR MAERCKLEIN, Milwaukee.—I would like to answer that part of the question a little differently. Just as Doctor Wenker says, we are more often deceived in the blow of the mallet than we are in the pressure of the hand. What kind of a mallet did Doctor Farrand use?

DOCTOR FARRAND.—Hand-mallet.

DOCTOR MAERCKLEIN.—That is very likely deceiving in the hands of the user. The blow of every mallet is more or less on the surface, while the force of the hand-presure is all the way through the filling. If the layer of filling is thin enough and the force is great enough, that is all right.

Then in the matter of breaking edges by hand-pressure, I would state without fear of contradiction that the cavity is improperly prepared.

DOCTOR FARRAND.—You have your enamel supported by dentine, and say that dentine will stand the force of the ordinary operator (the tooth naturally will resist from about eighty to one hundred and twenty pounds of pressure) if you remain within the reasonable limit of thirty-five pounds. How much pressure will enamel stand that is unsupported by dentine?

DOCTOR WENKER.—A block of unsupported enamel about 1.800 of an inch square, when placed between two steel plates, will crush under a stress of from thirty to seventy-five pounds. Whereas a block of dentine the same size will sustain about three hundred and fifty pounds stress, yielding from five per cent. to seven per cent. of its volume and returning to its normal dimensions upon removal of the stress.

QUESTION.—Steady pressure?

DOCTOR WENKER.—Yes, steady pressure, not a blow. Enamel is very much like glass in brittleness, while dentin on the other hand is very elastic.

In closing, I will say I am very much pleased that my paper evoked so free a discussion, and while a great deal has been said that is foreign to the subject, still we are assembled on this occasion not for chalk-line discipline, but for what we can learn by a free expression of our thoughts.

In writing my paper, I did not remember that Doctor Maercklein had opposed the use of the step-method of anchorage, but now I recall it. However, the Doctor's opposition to this method has been on general lines. My opposition to this method differs from the Doctor's, in that it is specfic instead of general. I believe very strongly in the step-method of anchorage in certain cavities, but I am opposed to its use in other cavities. As I stated n my paper, a study of the direction of the crushing stress is of primary importance in deciding when and where

not to use the step for retention. The strength of the lateral walls is of secondary importance.

The direction of the crushing stress in the bicuspids and molars, when viewed from the buccal side, is gingivally and mesially against the upper teeth, and gingivally and distally against the lower teeth as indicated in Fig. 2. It is plainly seen, therefore, that the direction of the stress is such as will tend to drive out all mesial upper and distal lower fillings. These, then, are the fillings which should be supported by the occlusal anchorage. But my contention is that all other proximal fillings in these teeth (distal upper and mesial lower) on account of the tendency of the stress to drive them *into* their cavities *do not* require occlusal anchorage.

Any modification of the bucco-lingual inclination of the teeth, as spoken of by Doctor Maercklein, cannot affect this principle. Besides, I cannot agree with the Doctor regarding the inclination of the bicuspid teeth. He has outlined an upper and a lower bicuspid in occlusal relation, on the board, both of which have a lingual inclination. I have made a very close study of dental anatomy for the past ten years, and I feel that I can safely take the stand that upper bicuspids do not, normally, have a lingual inclination.

The Doctor referred to some of my drawings as not showing retentive forms in the buccal and lingual walls. The particular point referred to, or indicated, you will observe, is very deep in shadow and therefore represents a depression. These drawings are from my own pen and I was not unmindful of the importance of buccal and lingual retention in the absence of occlusal, in their execution. I do not believe that these retentive forms could be more clearly represented on muslin with pen and ink. But why the Doctor should be looking for grooves, when he advocates parallel walls, I cannot understand, except that he believes in parallel walls in theory, but in practice prefers a slight undercut. I hope that the exception mentioned is true, as I do not think it wise to teach the use of parallel walls. Strictly speaking, parallel walls are not easily formed. This can be very easily proven by attempting to form them in the preparation of cavities. You will find it very impractical to carry out this theory. Parallel walls are on the danger line. They are more apt to vary to either side of parallel lines. The large majority of your attempts will result in diverging or converging walls. Which of you will run the risk of having the walls diverge and thus lose the filling? Not one of you. But I do not wish to imply that we should go to the other extreme and make excessive undercuts. I believe that we should keep as close to parallel walls as is practical; always keeping to the safe side.

The matter which I consider of secondary importance—the strength of lateral walls—cannot be passed without comment. By placing this matter secondary I do not mean that it need not receive particular attention. But on the contrary, after giving proper attention to the occlusal stress, we should make a close study of the strength of the buccal and lingual walls. There is where the judgment of the operator

comes into play, as spoken of by Doctor Babcock. The lingual wall in upper and buccal wall in lower cavities should be especially strong. The reason for this will be seen in studying the direction of the stress from an anterior aspect, as illustrated in Fig 1. You will observe that the direction of the stress during the crushing movement of the mandible (Fig 1, C) is also slightly gingivally and lingually against the upper teeth, and gingivally and buccally against the lower teeth. When either of these walls are lacking in strength or are entirely missing, an occlusal step becomes necessary for retention in distal upper and mesial lower cavities. Whether or not to depend on the lateral walls for anchorage in these cavities, in a given case, is purely a matter of judgment.

Doctor French stated that he does not believe in extension for retention, but rather in extension for prevention. We must have extension for retention in certain cavities, as I have pointed out, and the more we extend for prevention in these cavities the more retention is required, as a greater area of filling material is exposed to the occlusal stress. If the Doctor means that he does not believe in occlusal retention I agree with him, so far as his statement applies to distal upper and mesial lower cavities, but so far as it applies to mesial upper and distal lower cavities I must take issue with him.

I regret that no strong advocate of universal occlusal anchorage was present to oppose me in my contention. I thought this was a central location for advocates of that method. We have all read about your doings in this community, and yet you have all agreed with me that universal occlusal anchorage is an extreme and unnecessary sacrifice of tooth substance.

I thank you for the many kind things you have said about my paper and for your free discussion.

A COMPARISON BETWEEN THE JENKINS PORCELAIN ENAMEL AND THE HIGH-FUSING PORCELAIN.*

BY J. Q BRYAM, INDIANAPOLIS, IND.

Many of those who engage in the practice of dentistry before it was considered a profession expressed a desire to find a filling material that would satisfy the esthetic sense by approaching the color of the natural teeth. That desire has since found frequent expression, and experiments have been made with a number of materials; the two receiving the most attention being cement and porcelain. As the former has so far failed to fulfill more requirements than the latter, our best efforts have

*Read before the Ohio State Dental Society, December, 1903.

been directed to perfecting the use of porcelain rather than cement. The fact that its use is constantly increasing is evidence that a large number of dentists are becoming acquainted with its merits. "Porcelain as applied to the dental art prior to 1885, was practically confined to the manufacture of teeth and a few cavity stoppers. About this time a method of constructing a metallic matrix representing the cavity and filling it with glass or porcelain was devised." By constant efforts of a few dentists, porcelain has been kept before the profession and now it is generally recognized as a material of merit for the restoration of lost tooth structure in those cases where metals are objectionable because of their lack of harmony with the color of the teeth.

Since the introduction of cohesive gold, no material has received the same consideration that porcelain has received in the last four years. Many of us are asked: Is porcelain to be added to the list of permanent filling materials, or is it a fad to insert porcelain inlays, and will this, like many other fads, pass away in a short time? It is true that we are sometimes carried away by certain fads, but if a fad has been an education to a higher appreciation of dental services, then it has been of some value. The gold crown fad has passed, but we have learned that badly broken down teeth can be conserved and made useful. Cataphoresis has taught us that a pulp can be anesthetized by the diffusion of certain drugs through the dentin to the pulp. So pressure anesthesia is the result.

One of the elements of true dental art lies in disguising the artificiality of the restoration of lost tissue or organs, and he who is able to disguise his art is truly the artistic dentist. If the insertion of porcelain inlays has been carried to an extreme by some of the enthusiastic exponents, their enthusiasm has caused many dentists to become interested in porcelain work and their esthetic sense has been developed to a higher degree so that they are now able to practice dentistry in a more artistic manner.

To what extent porcelain will be used for the restoration of lost tooth structure depends largely on the dentist and his clientele. Before porcelain can be used as a universal filling material, a large number of dentists will be compelled to develop the esthetic side of their nature. They cannot become artists if they are lacking in esthetic tastes and appreciation of the harmonies of nature. Much is said about educating the public to a

higher appreciation of dentistry, but the tendency of the profession to commercialism pevents many artistic operations from being performed. The questions that so often confront us are: "What will it cost?" and "how long will it last?" The success of the operation is determined by the price and durability from such patients' point of view.

Some of the advantages of porcelain inlays are:

1. Fillings can be inserted which only the expert can detect.

2. They are nonconductors of thermal changes.

3. The margins of cavities filled with porcelain are not readily attacked by caries.

4. The patient is relieved of the excruciating pain of adjusting rubber dam clamps for cavities extending beneath the gum.

5. The nervous strain on both patient and dentist is lessened.

6. Porcelain gives a better masticating surface than metal.

7. Busy patients need not spend so much time in the dental chair.

The disadvantages of porcelain are:

1. The friability of porcelain causes it to fracture readily.

2. It is impossible to bevel the cavity margins to protect the enamel.

3. It is difficult to match the color of the natural teeth.

4. The cement used as a retaining medium may cause a change of color in the tooth or inlay.

5. The cement will be dissolved, unless there is only a thin film used as a retaining medium.

Porcelain is not applicable for all forms of restoration and it should not be expected to entirely displace gold and amalgam as filling materials. When properly applied and used where indicated, it ranks first as a filling material. The indications of porcelain as a filling material may be classified first, according to the condition of the patient, and second, according to the class of cavities. Under the first classification comes the following:

WHERE PORCELAIN INLAYS ARE INDICATED.

1. In the teeth of nervous patients where it is almost impossible to prepare retentive forms of cavities for gold or amalgam fillings.

2. For those patients, either young or old, where the shock from the insertion of a large gold filling will almost cause nervous prostration.

3. For that class of patients who have a keen appreciation of artistic dentistry and who object to the conspicuousness of metallic fillings.

4. For those cases where the pericementum and alveolar process are diseased, always excluding any material which requires a great deal of condensation.

5. In teeth where caries has progressed to such an extent that the pulp is almost involved, and if filled with a metal the irritation caused by thermal changes will cause death of the pulp.

THE CLASSIFICATION OF CAVITIES WHERE PORCELAIN IS INDICATED MAY BE AS FOLLOWS:

1. All cavities on the labial and buccal surfaces of teeth.

2. All simple proximal cavities on incisors and cuspids.

3. Proximo-incisal cavities, if the cavities can be so prepared that the retentive resistance will be greater than the stress.

4. Cavities involving all or a portion of the incisal edge.

5. Deep cavities on the occlusal surfaces of molars.

6. Proximo-occlusal cavities of bicuspids and molars, provided a large enough mass of porcelain can be used to withstand the force of mastication.

7. Cavities involving the entire occlusal surfaces of molars.

THE CONTRA INDICATIONS FOR PORCELAIN INLAYS ARE:

1. In those cavities where the stress will dislodge the filling or cause it to fracture.

2. In all cavities where it is impossible to construct a good matrix because of the inaccessibility of the cavity.

3. On incisors which are thin labio-lingually through the incisal third.

The construction of porcelain inlays involves four sets of manipulative principles:

1. The preparation of the cavity.
2. The construction of the matrix.
3. The fusing of the porcelain.
4. The setting and finishing of the inlay.

Each step presents a number of mechanical principles which if not properly observed will cause an imperfect filling. The failure of many inlays may be attributed to faulty manipulation, for too many beginners attempt the construction of inlays for the mouth before they have mastered the technic.

That many dentists fail to comprehend the principles by which inlays are retained is shown by their cavity preparation, and when asked how they expect the inlay to be retained, their answer is, "by the cement." This lack of comprehension may be largely due to the radical statements of some of the porcelain enthusiasts, some of which are as follows: *"For those bordering on nervous prostration and those high-strung, nervous temperaments for whom it is a physical impossibility to prepare a cavity even for a cement filling, to say nothing of gold, you can do permanent work with porcelain." "After the cement has completely crystallized, a thin porcelain filling in the occlusal surfaces of molars will have the full strength of the whole tooth to resist the masticating stress and is in no danger of fracture. * * A dentist has been brought up all his life on one law of self-retentive form of cavity and interlocking form of filling and it is hard for him or inlay workers to break away from that law. There are inlay workers to-day who are working upon self-retentive forms of cavity formation, and grooving their inlays or baking into them platinum pins or loops to make them as near interlocking as possible. I believe inlays depend upon the law of close adaptation and the medium of completing the close adaptation crystallizing under pressure."

If such statements were true, there would be no need of other filling materials. But such as these have mislead many skillful dentists and after a few failures they have decided that porcelain as a filling material is not practicable.

**Dental Review*, May, 1903.

PREPARATION OF CAVITIES FOR INLAYS.

Cavities for inlays should be prepared with the same carefulness that should be used for other fillings. The opposite walls of simple cavities should be parallel and form right-angles with the pulpal wall. In cavities where steps are used, they should involve enough of the tooth structure to resist the force of mastication. It is better to cut the step through the middle third of the crowns to prevent the porcelain and cement from showing through the enamel on those incisors that are thin labio-lingually through the incisal third. Where pins are inserted to assist in retaining inlays, in teeth with vital pulps, they should extend far enough into the dentin to give necessary resistance but not far enough to encroach upon their pulps. All frail enamel should be removed and the margins of all cavities should be smooth and in definite curves or straight lines. The margins should be so formed that there will be no short bevels to give frail edges of porcelain.

The best instruments for the preparation of cavities for inlays are flat-face fissure and inlay burs, small Arkansas stones and excavators with short blades and their edges so formed that they will make all angles either right or obtuse and well defined.

THE MATRIX.

There are three general methods of constructing matrices for cavities:

1. Swaging the foil over a negative or an impression of the cavity.
2. Swaging into a positive of the cavity.
3. Burnishing directly into the cavity.

In cavities involving only the labial or buccal or lingual surfaces or in simple proximal cavities, a matrix can be swaged over an impression and an inlay constructed which accurately fits the cavity. The method of swaging into a positive die of the cavity has some followers, but it hardly seems possible that a positive die can be obtained that will reproduce the margins of the cavity with that degree of accuracy that is required in inlay work. The method of burnishing the foil directly into the cavity has more advocates than either of the other methods, and many who have tried the swaging process have returned to this method.

A combination of the swaging and burnishing methods can be used successfully The technic of constructing a matrix is as follows: Take an impression of the cavity in dental lac or cement, and then construct a positive die of the cavity by mixing a mass of cement and embedding the impression in it. Allow the cement to harden, then separate and invest the die in the ring of a swaging device. Coat the die with soap-stone, then place a piece of foil over it and swage with a water-bag or unvulcanized rubber. Remove the matrix and cover the floor with porcelain and fuse. Now fit the matrix into the cavity and burnish the metal to the margins. The heat required to fuse the porcelain thoroughly anneals the metal. This method is especially good in large cavities, and has the advantage of conforming the foil to the cavity by the use of the die so that the final burnishing is made quite easy.

THE FUSING OF PORCELAIN.

Porcelain is divided into high and low-fusing bodies. There is a difference of opinion regarding the relative merits of each form, and the ardent advocates of the one can see no good in the other. Both have their application and the dentist should no more confine himself to one form of porcelain that he should to one form of gold or alloy.

All high-fusing porcelains contain silica, kaolin, feldspar, a flux and the oxids of certain metals. Silica is the oxid of silicon; it is almost infusible and insoluble in all acids except hydroflouric. It gives the fused porcelain a translucent appearance and adds strength. Kaolin is the silicate of aluminum and is a very refractory clay. This is added to porcelain to impart stability of form and it is this property which permits it to be moulded and carved. Relatively large proportions of kaolin tend to give porcelain an opaque appearance. Feldspar is a double silicate of aluminum and potassium. "On account of its ready fusibility, it serves to agglutinate the more refractory ingredients, and when diffused throughout the mass imparts a semi-translucent appearance." The flux is composed of some of the following: glass, the carbonates of sodium and potassium, calcined sodium borate, sodium and aluminum flourid (cryolite). One or more of the materials is added to the silica or feldspar or both and are used to render the porcelain more fusible.

The basal ingredients of high-fusing porcelain may be used

in a formula of low-fusing, but the fusing point is regulated by the proportion of flux added to the formula. The flux is incorporated with the basal ingredients and the same heated until the flux agglutinates the refractory materials. The process of fusing and grinding is continued until all the ingredients are thoroughly mixed. The action of the flux on the refractory materials increases the fusibility and the porosity of the porcelain.

The Jenkins porcelain enamel is classed as a low-fusing body. It is prepared by a process of manufacture not in vogue in any other laboratory, and it has properties not possessed by any other low-fusing porcelain It has density, hardness and strength equal to any of the high-fusing bodies. Its colors more nearly harmonize with the natural teeth. *Dr. Walter W. Bruck of Breslau, Germany, says: "It has been claimed that the Jenkins material does not differ essentially in comparison from the glass powders previously in use, and that it melts over a Bunsen-burner, which fact justifies the suspicion that it is nothing more than a glass compound. I have busied myself in these last years, not only with making fillings after the Jenkins system, but also have been interested in studying the composition and fusing point of this porcelain enamel, and of other compounds of like nature. * * * * I had some of the porcelain mixtures, which have come most into use, analyzed in the chemical institute of the Breslau University, the result being that the Jenkins powder is shown to be almost identical in composition—the variation being but slight, with the so-called 'high-fusing' porcelain as well as with the hard German porcelain tested by H. Segar, but not more exactly designated."

MATRICES FOR JENKINS' BODY.

The technic of preparing a cavity and constructing a matrix is the same for the Jenkins porcelain enamel as for the high-fusing porcelains. Either gold or platinum foil may be used for the matrix. On account of the pliability of gold, some of the advocates of the Jenkins enamel claim that its chief advantage is that it may be burnished into deep cavities, and better adapted to the cavity margins. It is true that gold is more pliable than platinum, but with the improved form furnished by The S. S.

*"The Method of Filling Teeth with Porcelain." Translated from the German.

White Dental Mfg. Co., a matrix for a cavity of any depth can be constructed of platinum that will conform to its walls and have its cavity margins definitely defined. Doctor Jenkins recommends the use of No. 30 gold-foil for constructing matrices. Because of thinness of this gauge foil, the matrix tends to distortion upon removal from the cavity and to change form during the process of fusing the porcelain. Any material used for a matrix should be rigid enough to retain its shape upon removal from the cavity, or when heated to the fusing point of the porcelain.

A table compiled by Dr. W. A. Capon and Mr. J. F. Hammond gives the approximate fusing point of Jenkins' enamel 1544 F., Brewster's enamel 2047, Brewster's foundation 2210 and S. S. White's and Close's body at 2300. The low degree of heat required to fuse the Jenkins' enamel permits it to be fused in the flame of a gas or gasoline blowpipe. This is an advantage over high-fusing porcelains for those dentists who are unable to procure the electric current.

JENKINS' ENAMEL.

The shrinkage of the Jenkins enamel is greater than that of the high-fusing porcelains. The slight affinity of the porcelain, while fusing, for the matrix, seems to increase the tendency of the mass to form a spheroid, leaving a space between the walls of the matrix and the porcelain. Because of the amount of shrinkage, it requires from four to six bakings for an inlay made of this enamel, where two or three would suffice for the same sized matrix filled with high-fusing porcelain. The time consumed in baking a small inlay of this enamel is less than that required for the high-fusing porcelain.

The Jenkins enamel is harder, denser and less brittle and will resist a greater stress than the high-fusing porcelains. The surface of the porcelain presents a less porous appearance when ground, so when inlays constucted of this material are ground, they can be given a high polish.

The tendency of the Jenkins enamel to form an amorphous mass in the matrix after the moisture has been absorbed, is one of its disadvantages. This may be due to the lack of an ingredient in the compound to impart stability of form. It is more difficult to construct proximo-incisal and proximo-occlusal fillings of this material than of the high-fusing porcelains, because the properties of enamel prevent it from being readily carved.

Regarding the availability of the Jenkins porcelain enamel, we quote again from Dr. Walter W. Bruck: "The mistrust of new discoveries and methods is to a certain degree excusable, since it often occurs that quite useless innovations are extravagantly praised. It is certainly desirable that warnings founded on experience should be published in case of useless and worthless things."

"When Doctor Jenkins, whose standing as a practitioner I have no need to certify to, made known his method after years of experiment, he not only explained it theoretically in a manner worthy of admiration, but also exhibited it practically in the mouths of his patients with brilliant and almost never failing success. Such a discovery, thus announced, may be received at once with a degree of confidence. That in this case confidence was completely justified, is proven by the many satisfactory trials of this method by German dentists and reported by them both verbally and in writing. So much the more astonishing is it that such really useful discoveries are often subjected to unreasonable criticism." Dr. W. H. Taggart says,*"The man who vigorously condemns a low-fusing body will have a lot to take back next year, and the low-fusing man who ridicules high-fusing bodies will have more to take back. There are possibilities in either one. * * * * Some of the most beautiful inlays I have ever made were made with the Jenkins bodies. * * * * There is no doubt in my mind, but that the Jenkins body has physical properties which make it suitable for use in certain cavities. The fact that it has not been used more than four or five years is no argument against it. We should strive to learn its possibilities."

A brief resume of the properties of the Jenkins porcelain enamel is as follows:

It is less brittle than the high-fusing porcelain.

It is fully as strong.

It more nearly imitates the appearance of the natural teeth.

Its density and hardness are greater than that of the high-fusing porcelains.

Its shrinkage is greater.

It is more difficult to restore contours with the Jenkins enamel.

**Dental Review*, September, 1903.

It requires less time to construct simple inlays of this material.

It is a good material for dentists who are unable to obtain an electric current.

MANAGEMENT OF THE INLAY MATRIX.*

BY L. E. CUSTER, A. M., D. D. S., DAYTON, O.

One of the first problems that the beginner in porcelain inlay work meets is the tendency of the matrix to change shape under the contracting influence of the porcelain. All porcelains lose bulk in passing from the powder to the solid form. This takes place for reasons well known. The amount of shrinkage in bulk under proper fusing depends largely upon the condition of the powder before fusing. The powder being formed into a paste by the addition of water and placed into the matrix, if lightly jarred will settle and become fairly compact. The condensation can be further carried on by absorbing the water in a napkin, adding fresh water and again jarring and absorbing the moisture. This can be repeated several times to advantage. The jarring is best done by drawing a knurled instrument across the tweezers with which the matrix is held. The thorough condensation of the porcelain prior to fusing not only reduces the amount of shrinkage but insures an inlay of fine texture and much time should therefore be given to this step. However, in spite of all the care that one can give to the act of condensation there will always be a shrinkage in bulk when the powder has become a solid mass and this shrinkage will always be a problem in inlay work. It is a property of porcelain when fused upon a piece of metal to draw the metal to it as it passes into the solid state. If, however, the metal is sufficiently rigid, then the porcelain appears to melt down to the metal without changing its shape. This is demonstrated in every case of continuous gum and it is surprising how thin the plate may be and yet control the porcelain when passing from the liquid to the solid state. In inlay work, however, it is necessary to use metal exceedingly thin, so thin that it has little natural stiffness to resist the draw of the porcelain. Herein lies the most important problem in inlay

*Read at Ohio State Dental Society, December, 1903

work; when the matrix is thin enough to serve its purpose it has not sufficient stiffness to control the porcelain. The tendency of the matrix to change shape increases with the size of the cavity; first, because there is greater loss of bulk in the porcelain, and, second, because a large matrix is more easily bent than a small one. A long strip of metal will bend by its own weight.

STRENGTHENING THE MATRIX.

The first step then would be one directed to the strengthening of the matrix itself by giving it such a form as to stiffen it against the contractive influence of the porcelain. It is desirable to use the matrix as thin as is consistent with proper handling in order not only to secure a more perfect adaptation to the cavity walls themselves but also to reduce the discrepancy of fit due to the thickness of the matrix. Except in those cavities whose margins assume a bell shape and where a little is dressed from the bottom of the inlay there will always be an incomplete adaptation at the margins proportionate to the thickness of the matrix material. It, therefore, being desirable to use the matrix very thin it is possible to stiffen it against the contractive influence of the porcelain by turning the margin of the matrix at right-angles to the cavity. If a wide margin is left to the matrix and this is turned over the edge of the cavity so as to form an unbroken rim it not only defines the cavity outline but stiffens the matrix at the cavity margin to an extent that is usually sufficient to resist a change of shape. This course is practical in all crown cavities of bicuspids and molars and in the labial cavities of the anterior teeth. In approximal cavities it can only be carried out where there is sufficient space and where the cavity does not extend too far cervically. Even where this cannot be done at the cervix, it should be carried out at all other margins and the cervix treated in a manner now to be described.

TO LESSEN SHRINKAGE.

The use of small rods of high-fusing porcelain dropped into the matrix and the new porcelain flowed around the same was first suggested by Dr. J. W. Wassall. These rods not only lessen the amount of shrinkable new porcelain but act as supports to the matrix walls. They are now made by Mr. Brewster and can also be made by the dentist if he will fuse a strip of high-fusing porcelain and cut up the same with wedge-cutters. In

using these rods, one, two or three as the cavity permits are selected of such a length that when dropped into the matrix they will lodge upon the sides before reaching the bottom. The porcelain is then flowed around them and when fused it will be found that the matrix has been supported so well that the porcelain has contracted toward the rods and matrix and a change of shape has been prevented.

The third procedure and one to which I would call special attention is the use of a thin layer of comparatively high-fusing porcelain upon the matrix. The Brewster outfit contains what is termed "foundation body," which was primarily intended as a foundation for bulk and color, but this when followed by the enamels of the same outfit does not possess sufficient difference in the fusing point for the purpose indicated. Experiments were made with higher-fusing bodies and it was found that a mixture of Close, four parts, and Beauman body, one part, made a body of such high-fusing point that it remained unchanged when the Brewster enamel was fused thereon. After further experiments it was found that the Beauman body might be left out entirely provided the Brewster enamel was not at any time overfused.

METHOD OF MAKING THE INLAY.

In making an inlay by this method, I proceed as follows: A fairly good adaptation of the matrix to the cavity is obtained. This is then covered with a very thin layer of Close body, which naturally flows deeper at the bottom than upon the sides. After being fused it is returned to the cavity and at this stage much care is given to the adaptation of the matrix to the walls of the cavity. A large pellet of cotton is placed in the matrix and compressed with considerable force equally distributed. Upon removing the cotton it will be found that the matrix which before would rock in the cavity is now firmly seated. The porcelain is cracked in many places but still adherent to the matrix. Care is now taken that all the margins are carefully adapted not by prolonged burnishing but by delicately pressing the metal against the cavity margin. After the matrix has gone through the heat of the first fusing it will be found to be extremely dead. The moment a burnisher is rubbed across it, it is endowed with temper and spring. With one instrument I steady the matrix while with another I go entirely around the margins carefully and deli-

cately pressing the metal against the walls. The porcelain veneer should be so thin at the margins that it can easily be cracked by the instrument in the act of adaptation. The matrix is now removed and a second layer of Close body is applied the same as the first, and fused. If this layer was not too thick it will be found that the matrix now fits the cavity as it did when removed. If too much porcelain was used another adaptation will be necessary.

Having satisfactorily adapted the matrix to the tooth and this supported by the high-fusing body, the enamel can now be added without danger of contracting the matrix, provided not too much enamel is added at a fusing and only sufficient heat is used to fuse the same.

THE PROVINCE OF PORCELAIN WORK IN DENTISTRY.*

BY HART J. GOSLEE, D. D. S., CHICAGO, ILL.

The subject of porcelain work in the numerous phases of its application to dentistry is an important feature of the more modern practice of the profession, and of the literature, pertaining to it, of the day. The employment of porcelain encompasses so great a scope of general usefulness that it is undoubtedly destined even to increase in attractiveness and to continue to be so regarded in proportion to the more general development of an universal desire for the accomplishment of higher artistic attainments in our efforts and of our true awakening to a just recognition of its scope and province.

Notwithstanding the possible logic of so reasonable and qualitative an assertion and prophecy, however, it has only recently been said by a prominent writer that "the profession is being deluged with a tidal wave of enthusiasm for porcelain work, from the undertow or reaction of which it would be some time in recovering."

In my opinion, this is a statement which should be carefully analyzed and digested, because it is both false and true—paradoxical though such an assertion may seem. In a broad sense

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it is true only in so far as *over*-enthusiasm may induce an injudicious application; and in a liberal sense it is equally false because there must, and will, always be a certain proportion of cases where the application may have been accidentally or otherwise confined within the range of its practical limitations.

A degree of *over*-enthusiasm, however, in any special line of thought, or in any particular field of labor, whether it be of a scientific or practical nature, may—and, indeed, often does—react to the injury of the theory inculcated, or of the product resulting, and yet it quite as often serves a useful purpose by the stimulation and encouragement which it engenders.

The wheels of progress in whatever line have doubtless gained more momentum from the activity and energy of the enthusiast than from the philosophy of the conservatist. If this may be truthful—and a liberal review of the history of the progress of the world would seem to so indicate—then it must in turn be also true that we must never overlook, or fail to pay tribute to, even that class of enthusiasts whom some are disposed to designate as "cranks," because those who by nature may be more conservatively inclined are more or less dependent upon the former class for the inspiration which stimulates and encourages the development of their more logical minds.

This theorem applies to the general application of porcelain work to dentistry in so far as that it warrants us in conceding that even the most radical enthusiast commands and deserves our respect and consideration for his vigorous efforts in encouraging the adoption of methods of procedure which enable us to better serve our sphere of usefulness in the preservation or restoration of the teeth of the human family. That this class of men has done much to increase our artistic attainments, and incidentally has aided very materially in elevating the profession to a position where it commands the respect of the people, and where any insinuation that it is the mere vocation of the artisan or craftsman can with justice and propriety be refuted, there can be no doubt.

And yet, gentlemen, whilst I am willing to thus acknowledge a debt of gratitude to those whose, perhaps, overzealous enthusiasm has led them to become designated as "cranks," but whom I prefer to refer to as the *radical enthusiast*, yet, after all, you will agree with me in that it is to the efforts of the *conservative en-*

thusiast that is due the real positive *development* and *progress* of porcelain work, in all or any of its phases, to its present degree of perfection; and to whose efforts we must always look for such logical confirmation and affirmation as will insure its stability and permanency as an art; because where the application is necessarily confined to such a diversified range of conditions and requirements, development and improvement will only obtain, and must always depend upon a conservative and judicious comprehension of its true province and practical limitations.

THE TWO CLASSES OF DENTISTS.

In reviewing the progress and considering the present status of porcelain work, it will be found, I think, that the profession at large may be generally divided into two classes: Those who, at the expense of time and experimentation, and in the face of discouragement, perhaps, have become sufficiently familiar with the requirements, technic of manipulation, and possibilities, as to acquire a degree of confidence and skill which enables them to obtain, to a greater or less extent, the perfection of art which is possible; and those, on the other hand, who have been so influenced by the radical enthusiast as to accord to it a more or less universal application—and who have been led to expect to achieve success before acquiring skill — or even before possessing the required fundamental knowledge to begin with; men who have not been willing to so apply themselves as to be able to surmount obstacles and overcome discouragement, and have thus met with failures; and, still further, those who have been influenced by others, or who have always been "just naturally" skeptical.

Such failures as might be expected to result from the efforts of those who have undertaken to accomplish, without a definite knowledge of the fundamental principles and requirements, and without experience or skill, that which others who possessed those attributes did accomplish, should not necessarily influence others, cause skepticism, or provoke condemnation. Indeed, no man does justice to his profession, or even to his own intelligence, who condemns that with which he is not thoroughly familiar, or which may have failed in his hands, as being impractical, at least, not until he has positively ascertained that the fault was not entirely his own.

It is these unreasonable and unwarranted expectations which

account for a large proportion of failures, and which provoke an ultra-conservative influence, which does more to retard progress than to advance it.

Since the very advent of porcelain work, the atmosphere surrounding the practicability of its application has been impregnated with the skepticism, and even the cynicism, of a large proportion of the profession; and yet, notwithstanding such influences, it has developed into an *art,* and one which is surely destined to occupy a permanent and conspicuous place in the practice of the dentistry of the future. It is an "art," however, which requires so high a degree of skill and delicacy of manipulation in its application as to account for the occasional, or frequent, if you please, discouraging failures of some.

We are not born skillful, however, nor do we very often possess such an attribute in a *special* or *particular* line as a *distinct* heritage. Skill is something which must be acquired, and developed, and to develop it to the necessary extent to insure success means perseverence and application to a degree which too often men fail to recognize, and are not disposed to appreciate or promote.

The trouble with many of us is we often forget that we must crawl before we can walk, and that we think that we *ought* to know before we really do know. But a smattering of knowledge, of course, is usually worse than none at all.

If you will agree with me in that these homely phrases may be appropriate, and that in this application they may possibly be tinctured with truthfulness, I think we can then easily account for skepticism and failure.

TO BE SUCCESSFUL.

To appreciate the possibilities of this class of work and to be successful in its application, it is necessary that one should study the cause of, and profit by, failures. That one should possess a liberal knowledge of the underlying fundamental principles and requirements; that one should appreciate to the fullest extent the importance of detail, and be scrupulously painstaking in their execution; that he should possess the higher ideals of the artist, combined with the instincts of the mechanic, and above all, that he should possess that degree of discretion and good judgment which is so tersely expressed in that commonplace and homely phrase, *horse-sense,* is positively true. That

sound judgment which comes only with experience, perhaps, but upon which the success of any line of procedure—particularly when its application is necessarily confined to such a diversified range of conditions as abnormal nature usually presents—is essential, is also positively true, because in dealing with such conditions nothing is, nor could be expected to be, universally applicable.

While the achievement of success will increase in proportion to the degree in which the former requirements may be observed, in so far as the execution, at least, is concerned, the practicability or impracticability of a class of work in which a more or less friable mineral substance plays the leading part will depend largely upon the observation of discretion and judgment as to its limitations.

The sooner we appreciate the philosophy of such conclusions, the sooner we put forth such efforts, and the sooner its application at our hands may be so governed and restricted, the sooner will we cease to aid in retarding a gradual evolution of higher artistic conceptions, and the sooner we will be contributing to the esthetic embellishment and the further development and progress of the profession.

While it is true that the possibilities of porcelain work are largely of an esthetic nature, and that in its employment we are conserving a higher degree of art, yet this alone does not constitute the entire scope of advantages to be obtained, because the hygienic properties afforded by its use, and in its presence in the mouth, are scarcely second in material importance and desirable significance. Although porcelain *is* a more or less porous substance, yet, notwithstanding a statement to the contrary recently made by a prominent writer, the *surface* of the well-vitrified piece of porcelain is practically impervious to the penetration and accumulation of secretions, which is not true of the surface of gold or platinum, or any of the metals, no matter how highly it may be polished.

THE USEFULNESS OF PORCELAIN.

In considering the usefulness of porcelain or of any other substance or method of procedure, I take it that it is the particular province of the dentist to preserve and restore the teeth of the human family, and that it should be the effort of the modern practitioner to accomplish this: First, in a manner which offers

the greatest possible degree of permanency; second, in a manner which will closely simulate the natural, or, rather, the typically normal, condition as possible; and, third, in a manner which will offer the very highest degree of hygienic properties; and I believe that the judicious and skillful use of porcelain offers the maximum of possibilities in all three of these cardinal prerequisites.

In the hands of the operator the primitive application of the art of porcelain work was confined to the construction of artificial dentures, and in this particular field of usefulness such application still offers the greatest possible opportunities for obtaining all of these combined desirable qualities. Indeed, it is my opinion that it should be regarded as a lamentable fact that such opportunities, in the composite, are not now more often accepted.

The same law governing general or universal application, however, holds good in this, as in all other indications, and hence the degree of discretion and judgment which has been mentioned must always be exercised in the selection of cases which may be favorable for its application, if successful achievements are to result. It must be remembered that the employment of porcelain *always* offers the highest degree of artistic possibilities, but also that these do not constitute the entire scope of the requirements for successful operations.

A conservative and judicious application, such as would insure success, would confine the indications for such dentures to that class of full upper cases where the mouth is in a more or less favorable permanent condition of absorption; and to that class of partial cases where a similar condition exists, and in both of which classes a sufficient bulk of porcelain to insure the required integrity may be employed. And then this must also be even further supplemented by a metal superstructure, which will afford adequate support and protection to the porcelain.

This is always necessary, because porcelain is a friable substance, and thus, wherever its employment requires that it must sustain stress, it should be fortified against the dangers of such by a strong and rigid metal superstructure. Hence, its use would be contraindicated in all cases where such opportunities are not afforded, and for this reason it is not so well adapted to the construction of lower dentures, because of their more or less

unfavorable shape, and for the reason that other substances and other methods will better conserve to one of the requirements by offering a greater possible degree of permanency.

This combined requirement of favorable absorption, and of metal construction, as applied particularly to the indications for and requirements of full upper dentures, has often been used as an argument against this class of work, the argument being based upon the possible easy displacement of the case in the mouth, owing to its weight.

As the retention of an upper denture, however, is due mainly to an adaptation to the tissues of an unequal resistance upon which it rests, which will afford an equalization of pressure upon both hard and soft places, and as this is then supplemented by the action of the muscles of both cheeks and lip, I agree quite fully with Doctor Haskell in that weight cuts but little, if any, figure, providing such requirements have been skillfully observed.

A further application of porcelain to prosthesis, and particularly to the construction of partial dentures other than continuous gum, which will add materially to the artistic possibilities, may be observed in the making of gum blocks for individual cases. Such blocks of two or more teeth may be easily made by first selecting suitable facings; grinding them to the desired adaptation; soldering them together with a small platinum or platino-iridium wire; burnishing platinum foil to a close adaptation to the model, and filling in between it and the facings with porcelain and gum enamel until the desired gum restoration may have been produced, and then subsequently effecting the attachment to the base by whatever means may be indicated.

Also, in the construction of partial cases on any kind of base, where single teeth are to be supplied and where a more or less extensive absorption demands some effort toward an artificial reproduction of such tissue, a most artistic result may be obtained by selecting a tooth of the proper length to *correspond with the adjacent teeth,* and then extending its neck with sufficient gum enamel to reproduce the lost tissue and admit of proper contact with the gum. This may be done previous to grinding the tooth to its adaptation, and will then admit of a very artistic observation of the requirements in securing such contact, and of those incident to symmetrical alignment and corresponding length with adjacent teeth, all of which are so essential to artistic

results, and yet so difficult to accomplish with the blocks or single gum teeth as procured from the supply house.

PORCELAIN BRIDGE-WORK.

All that has been said with regard to the requirements in the application of porcelain to the construction of dentures is equally applicable to bridge-work. Personally, I am not much in favor of constructing *extensive* bridges in porcelain, because of its shrinkage in fusing, and friability afterward combined with the difficulty of repair; and, yet, the artistic results possible, where the indications are favorable, where the requirements are caefully observed, and where the detail is skillfully executed, make for it a permanent place in the construction and application of either fixed or removable bridges.

The advent of platinum solder, or of an alloy for assembling the various parts of the platinum superstructure in a manner which precludes a possible disarrangement of their individual relation in the subsequent fusing of the porcelain, has done much toward making successful results possible; and, if the application be confined to the construction of cases which are favorable, in accord with the previously mentioned opportunities and requirements, porcelain bridges up to the extent of five or six teeth at least, may be made with every assurance of success. All teeth included in the bridge, however, which are to possess masticating surfaces, and which are to withstand masticatory stress, must have such porcelain *adequately supported by the metal superstructure,* or failure will be sure to follow, owing to the brittle and friable nature of the porcelain.

In the construction of individual crowns for the ten anterior teeth, or for those teeth which are within the range of vision, where the esthetic requirements are so great, there is positively no other method of procedure incident to their artistic and more or less permanent restoration, which offers the same favorable opportunities.

This is particularly true of restoring the bicuspids where the flaring gold crown is so often seen, and quite as frequently regarded as the only means by which permanency may be insured. It is also true of the remaining anterior teeth, however, if a definite line of construction which will conserve to the highest degree of mechanical, as well as artistic, requirements is observed; and, in my mind, there is no doubt but that such crowns will pos-

sess a degree of inherent strength next to that of the gold crown, and exceeding that of my other style of construction.

PORCELAIN INLAYS.

The application of this art to the filling of teeth is the most modern phase of porcelain work, and marks an era in the progress of dentistry as a true art. The beautiful and artistic results which are possible command for porcelain in this particular application the respect of both the profession and the laity, and make for it a permanent and conspicuous place among the methods of arresting the progess of caries of the teeth, and restoring them to their original outline; and yet, gentlemen, an injudicious, unskillful and indiscriminate use has even already caused its abandonment by some.

When employed where and in the manner indicated, nothing will serve the same purpose in all phases of the requirements, and yet, where contraindicated, many other methods will doubtless serve to even much greater advantage.

In my opinion a judicious employment of porcelain inlay work would confine its application largely to approximal, labial or buccal and incisal or ocalusal cavities, of favorable shape and proportions, in the eight or possibly ten anterior teeth, or in other words mainly to those cavities which are within the range of vision. But wherever it is necessarily subjected to undue masticatory stress, or where the cavity proportions, or opportunities for mechanical retention and resistance may be unfavorable, its use is contraindicated, because other methods of procedure will usually offer greater opportunities for more permanent results.

In conclusion, I desire only to emphasize that, with a correct knowledge of the province and limitations of porcelain work, with the acquirement of skill in, and the more conservative application of, this art, and with the improved facilities in the nature of products and furnaces, the modern practitioner should be able, if his ambition so directs him, to conserve through this work the very highest possibilities of the dental art.

DISCUSSION ON PAPERS BY DOCTOR BYRAM, DOCTOR CUSTER AND DOCTOR GOSLEE.

Dr. H. C. Raymond, Detroit, Mich.—Doctor Byram has set before us very clearly his opinion of the relative values of high and low-fusing porcelain, and I congratulate him for the able manner in which he has carried out his object. I cannot say whether it was also his object to give a paper in which there would be little or nothing to discuss, but if such was his intention, I congratulate him in the accomplishment of that also, for the paper contains very little for discussion. His treatment of the subject is somewhat in the nature of a general bird's-eye view, followed by a set of axioms framed to establish, or definitely settle, disputed points. But though an axiom is generally accepted as a self-evident proposition or fact, it is not necessarily so, and there are two or three statements, laid down as facts by the essayist, which I think are open to exceptions. Treating the subject as the writer has, in such a general way, his views will in the main be endorsed by those familiar with the work, and much that he has said I heartily agree with.

That porcelain inlay work is not a fad I am sure all will believe who have practiced it successfully, and there are many who are doing so, and there will be very many more doing so as time goes on and proves to us what a great tooth conserver it is. Though I am probably as enthusiastic about it as any one, I am not one who thinks that porcelain is going to entirely supplant gold and some of the other filling materials, at any rate not at present, for they all have their place, especially gold; but I do believe that the time is coming, if it is not already here, when the only excuse for using gold in anterior teeth, where it will mar the beauty of the face and sometimes disfigure it, will be because the patient cannot afford porcelain, for unfortunately at present, the skill and time required to put in porcelain fillings precludes the possibility of using it for the masses. That, however, is nothing against porcelain itself. I think the time is not far distant when gold fillings in the anterior teeth will be looked upon with as much disfavor as are gold crowns in a like position. We can hardly tell from hearing the paper, whether its author inclines more to the high-fusing porcelain than to the low, or not. We might infer that he is on the fence, not at present having any choice in the matter. I don't hesitate to say that I am a high-fusing porcelain worker, and I became one after trying and observing both methods. But I am not one who does not see any good in the low-fusing porcelain, for I know that those who are skilled in its use get some beautiful results. The question of relative strength of the two materials may, I think, be entirely dispensed with, for the high grades of either material is sufficiently strong for our purpose. From some tests I have made, I cannot see that there is much difference between Jenkins' enamel and some of the high-fusing materials, though some very high-fusing porcelain, such as S. S. White's, is stronger than any low low-fusing porcelain. There is a great deal of talk about the density in one porcelain, and the translucency in another. One man saying that density is more requisite than translucency, and

vice versa, according to the degree the particular porcelain he is interested in, possesses these qualities. The natural teeth, we know, have a translucency, it is only slight, if any, at the necks of the teeth, but increases toward the incisal edge, where it becomes very marked owing to the bulk of the enamel there.

Now, we would naturally suppose that the nearer we can approach this translucency of nature where it exists the better we will succeed in imitating nature, and such, I believe, has been the experience of the most foremost porcelain workers. Too much density gives in a degree opacity, and opacity gives a china-like appearance to the porcelain, and robs it of the life-like resemblance to the natural teeth. It is because the high-fusing porcelain is more translucent and life-like than the low-fusing, that I place it above the latter in this respect. The necks of some teeth show considerable opacity or density, and in such cases the Jenkins porcelain, with its greater density might serve the purpose better than the more translucent, high-fusing porclain. I, myself, however, have found no difficulty with the use of the high-fusing material in such cases. The difference in the degree of polish that may be obtained after grinding the porcelain, the low-fusing men claim to be very much in their favor, but as a matter of fact, there is so little difference in this respect, that it would really not be worth referring to were it not that in this connection, I might say, owing to the greater tendency of low-fusing porcelains to bulge or assume a globular form in fusing, it nearly always necessitates grinding and polishing, after the filling is set; whereas the high-fusing porcelain retains its form almost perfectly, and if carefully built to the margins of the matrix, requires little or no grinding or polishing when finished. The less we grind porcelain after the final fusing, the better, for no polish we can give it equals the glazed surface it has when taken from the furnace.

Doctor Byram says, that owing to statements made by some porcelain workers, many think that the cement is all that is necessary to retain a filling in position, and judging from the number of fillings that come out, I think such must be the case. We must have a definite form for the cavity that will act as retention, as well as the cement, to hold in a filling. I don't mean anything in the nature of an interlocking form, as for gold, but a distinct cavity formation for porcelain, and this cavity formation is something that requires great care. We hear saucer-shaped cavties spoken of and written of by many, and some low-fusing advocates talk and write as if it was impossible to burnish a platinum matrix into any but a saucer-shaped cavity, pointing to that as a weakness or disadvantage in the use of platinum for the matrix. Such statements are very misleading, because they are untrue. I never form a saucer-shaped cavity. It would invite failure. All my cavities I give a decided form, and to some of them considerable depth. The inlay, however small, has always a decided seat to rest upon. It can only go into one position, and cannot roll around when being set. I know of no cavity into which a gold matrix can be burnished that a platinum matrix cannot also be burnished into. To repeat what I have written before, generally speaking, I can see but little, if any advantage, that the low-fusing porcelain possesses over the high-fusing, but do see advantages that the latter has over the former. The platinum

matrix is easier to handle after removal from the cavity, and requires no investment, which a gold matrix does, excepting in the simplest cases. To say nothing of the time required for investment, to me the invested matrix is not so simple and easy to work with as the uninvested one, and besides I know of no investment material that will not change form under heat, and so may cause change in the form of the matrix and the finished inlay. We cannot carve the low-fusing porcelain as we can the high. To me the method employed in high-fusing porcelain work is simpler and more definite than that used for low-fusing porcelain, though I don't think the question of time should enter in when we are working for artistic results. Since Doctor Byram referred to the difference in the time required between the two materials, in small fillings, I will say that the large contour fillings owing to there being much less shrinkage in the high-fusing porcelain, and its ability to retain its form under heat, it takes up less time than does the low-fusing as it requires fewer bakings to complete the filling. For the reasons mentioned, I am strongly inclined to favor the high-fusing porcelain, and I can strongly recommend its use to those starting out in the work, for I believe with it they will sooner obtain definite and pleasing results.

Although the electric furnace is the ideal one for porcelain work, the absence of the electrical current in the smaller towns need not deter any one from using the high-fusing porcelain, as there are small gasoline furnaces now on the market that will fuse almost any kind of porcelain. There will probably always be more or less difference of opinion regarding the relative merits of direct burnishing and working from impressions and casts of the cavity. For some compound cavities in bicuspids and molars, I start the matrix by swaging and make the final burnishing in the mouth. In the great majority of cases, however, I burnish directly into the tooth, and I consider it a simpler, quicker and more sure method of getting a perfect matrix.

I cannot help referring to what Doctor Byram said regarding those who try to do this work in the mouth before mastering the technic involved. That is simply inviting failure and discouragement. One must become familiar with the entire process of making inlays before working in the mouth. We were not able to go and make a beautiful gold filling or perform some other difficult operation in the mouth just from seeing some one else do the work, but had to practice and labor hard to achieve such results. Why should some, after seeing a man make and set a beautiful porcelain filling, think that they can go and duplicate it, without ever having done any such work before? They are attempting the impossible, and nothing but failure can result. Porcelain is a faithful servant when a due appreciation and mastery of the skill required in its manipulation is understood, but it is just as much of a master when attempted as something easy and not requiring any special effort to become skillful in its use.

Dr. G. H. Wilson, Cleveland.—We are to be congratulated upon such papers as these presented before our society. I believe their conservatism will voice the best minds of our profession to-day. The use of all new

things and ideas will meet with misuse, but this is necessary to establish their proper relation.

I like the distinction the Doctor made between radical enthusiast and conservative enthusiast. Enthusiasts are needed in all walks of life, and it is the radical that brings to the front the more rational conservative enthusiast, and therefore real progress.

We should have thoroughly impressed upon our minds that it is not wise to condemn a process or material because we have met with failures. Perhaps there is no profession in which the personal equation is so prominent a factor in the success or failure as in dentistry; and the use of porcelain being radically different from all former methods, there is little wonder there are many grievous failures; but when a few men have such fine results we should individually apply ourselves to overcome our deficiencies. It is always well to consider if the radical, either for or against, has the manipulative abilty or scientific attainments to warrant the position he assumes. The inefficient and conservative should not too severely condemn the radical, because he is needed as a spur to action.

The essayist truly says we are not born successful, and defines for us, genius. Some one has said that genius is the ability to do things without hard work. I believe it would be better to say that genius is the power to do things as the result of previous hard work. I do not believe we have a born genius, but we certainly have individuals born with inherent ability to acquire skill and knowledge more readily than others; but it has required months and years of arduous toil for these favored ones to attain unto their degree of perfection.

I would like to have the Doctor explain to what extent rolled gold or platinum plate will absorb moisture under the conditions found in the mouth. It is true that cast metal is more or less porous and that moisture may be forced through metal under high pressure.

I would commend all he has said about the good qualities of porcelain for plate work; but I think he places too much stress upon certain ideas in connection with the retention of artificial denture. I do not believe we should increase the pressure upon any of the vault portion of the mouth but the pressure should be relieved upon the hard places within the vault. With the alveolar ridge the reverse as true, we increase the pressure upon the soft places. I would make an exception to this rule when there are small abnormally hard circumscribed portions of the alveolar ridge; the pressure should be relieved upon these. The portion of the alveolar ridge upon which I woud especially increase the pressure, is that occupied by the six or eight anterior teeth. In such a case when the denture is placed in the mouth, it would only rest upon the back part of the vault and the anterior portion of the ridge, which we are endeavoring to compress. This would result in a large portion of the plate not being in contact with the mucus membrane, producing a partial vacuum, hence the denture is retained by atmospheric pressure. When the soft tissues were compressed the whole of the maxillary portion of the plate would be in contact with the mucus membrane, hence there would be no vacuum space or atmospheric pressure, the denture being retained by adhesion by contact. The

one essential is to have uniform pressure, so the denture cannot be displaced in mastication.

The essayist speaks of using platinum solder. I agree with Doctor Haskell that this is not necessary. If the two pieces of platinum to be united are nicely fitted, and a small amount of gold used for solder with high-continued heat, the two metals will be alloyed, and cannot be unsoldered in fusing the porcelain.

I can only partially agree with the Doctor in what he says about open-faced crowns. They should rarely be used, but in a suitable place and properly constructed, they will answer a very excellent purpose. They must be rigidly constructed or they will cause trouble. A shell crown should never be used upon the anterior teeth excepting in a few cases of old age, when utility may demand them.

I would like to ask the second essayist how it is possible for two men to take the same materials and each produce a porcelain that fuses at the same temperature and yet one will disintegrate in the mouth, and the other will not? It seems to me we are asked to be too credulous. We know that low-fusing porcelain is produced by the addition of potash, and all potash salts are soluble. It is reasonable to suppose that the porcelain will be decomposed by the fluids of the mouth just in proportion to the amount of potash contained. It seems to me it is well for a learned profession to make use of its scientific knowledge and not accept all statements of interested parties.

Dr. J. R. Callahan, Cincinnati.—Doctor Goslee has classified men into two general classes—the enthusiast and the skeptical. There is another class, who, for want of a better name, we will call selfish. They are usually skeptical, sometimes cynical and often discouraging. They sometimes boast of conservatism. When a new idea or appliance appears they save their time, their energy, their money, and let their enthusiastic and wide-awake friend do the work. Then Mr. Selfish slips around and gets Mr. Enthusiast to show him or give him the fruits of his labor, which Mr. Enthusiast is, as a rule, very willing to do notwithstanding the fact that Mr. Selfish seldom says "thank you." In this porcelain work Mr. Selfish is doomed to disappointment—no one can tell him all about it. It is true Mr. Enthusiast can and does help immensely to smooth the road in many places; still, to do porcelain work well, each and every individual will have to work out his own salvation to a greater extent than in any work with which I am familiar, and as the essayist says, we must each one crawl before we can expect to walk.

Doctor Goslee says truthfully that, among many other requirements, "he should possess the higher ideals of an artist." He means, of course, harmony in color, as well as form and general character. Take the one point of color; we must now study the theory of color with far greater energy and thoroughness than ever before, as for instance some of the circumstances which modify a color. Chevreue says: A given color—red, for instance—may experience many modifications, so as to appear very differ-

ent from what it really is, according to the circumstances under which it is viewed. It may be modified in its color

1. By being placed in contact with blue, the red appears yellower.
2. By being in contact with yellow, it appears yellower.
3. By being in contact with green, it appears purer and brighter.
4. By being in contact with black, duller.
5. By being in contact with white, lighter and brighter.
6. By being in contact with grey, brighter.

Thus the same red may appear many different reds according to the cicumstances under which it is viewed. It may be modified in its intensity or tone; thus: if a dark color be placed beside a different but lighter color, the dark color appears deeper and the light color appears lighter—this the result of contrast of tone. A color is also greatly modified by gloss—as is shown by plumage of birds, the wings of butterflies and by certain flowers. The colors of objects are also greatly modified by the form of the object, which may produce varieties of light and shade, and thus exhibit many *tones* of the same color. Both the tone and hue of a colored object are modified by the quality of the light by which it is illuminated—whether it direct sunlight—diffused daylight—or diffused reflected light.

So we can proceed to the end of the day—and then not have made a start in the study of colors, but it must be done.

The painter with his brush and paint places upon the canvass the landscape; then the picture is placed upon the wall for inspection—far away from the original scene—viewed by people who never saw the original scene there reproduced. It may be said by artistic admirers to be very natural, and beautiful, and indeed it may be, but suppose the picture were placed in the immediate vicinity of the original scene and direct comparisons be made, are there many pictures of the very brightest class that will stand that sort of test? Yet that is just what we have to do with our porcelain. It is not enough to say that the porcelain crown or plate or inlay is beautiful, but is it artistic enough to conceal the fact that it is artificial? Is it strong enough to do the work it is intended for? Will the inlay arrest the ravages of decay? Will the presence of this structure disturb the equilibrium of the delicate organs and tissues with which it is surrounded? You will agree with me that these are severe tests, but have we been able to meet these demands?

It has astonshed me to see how very quick the public has been to realize the possibilities of porcelain. There is an enormous demand for that which will conceal dental defects. To one who came into the profession on what may be called the gold wave, the change from gold display to porcelain concealment has been very sudden. Along with this sudden change and demand for the artistic is coming an ability to discriminate. As between the artistic and the inartistic, people are going to be able to discriminate much more closely as to results produced by Doctor A and Doctor B. It is quite likely that Doctor A, the inartistic and not overly accurate operator had better let porcelain alone, for porcelain plates, porcelain crowns, porcelain fillings, will show him up most unmercifully. I can speak from the book, for I have porcelain work out that I hope will

never fall under your critical eyes. I can now think of some of my productions that are peaches.

We talk continually of high-fusing and low-fusing bodies, of gold and platinum matrix, of direct burnishing of cavity impression, etc. In my opinion no man is thoroughly equipped for porcelain work until he is able to choose the body (high or low-fusing) metal or the method which is best suited to the case in hand; but if I were compelled to select some *one* porcelain body with which to work I should without hesitation select that known as the Brewster bodies and enamels.

Dr. E. S. Fuller, Piqua.—First, I want to show you some instruments which I use in the preparation of cavities. They are especially useful in occluso-proximal cavities in molars and bicuspids. I use the smallest size wheel and barrel-shape corborundum points, Nos. 150 and 152. I mount them on worn-out burs. The head of the bur should first be ground square and fitted snugly into the hole in the stone, and then cemented, using Ames' oxyphosphate of copper cement, which will hold them better than any other cement I have used. Then turn the points up true and to the desired shape in the lathe, using a diamond-point wheel-dresser. They are used to form the outline of the cavity, which is then completed with inverted cone and fissure burs. For occluso-proximal cavities, cut the foil a little longer than its width and a little narrower at one end and clip off each corner. Bend the widest end to an obtuse angle and crease it slightly along its longest axis. Hold in place with pliers and press to place, using hard-rolled cotton pellets. These may be used wet if desired, when platinum is used.

Dry cotton alone will complete a matrix for gold, but if platinum, the foil must be pressed to place with burnishers and points.

In making some experiments a few days ago, I observed the fact that if the greatest amount of heat is applied at the base of the filled matrix, the tendency toward spheroiding is eliminated, and the body will flow up against the sides of the matrix instead of drawing away and leaving a crevice at the margins. By using this method of melting, the number of fusings will be lessened, and the bubbles usually found in the base of the filling when the foil is removed will not be present. No furnace or blow-pipe at our command will furnish the heat necessary to melt high-fusing porcelain in this way, so we are limited to the use of a low-fusing body. It is to be hoped that some manufacturer will be able to furnish us with an electric furnace that will heat exclusively from below which will unable us to employ this method in our work.

Dr. W. A. Price, Cleveland.—I would like to ask Doctor Raymond what his experience has been in observing fillings—inlays—that have been in the mouth a great many years? He has been in a position to see these. This is going to prove a good deal to us, and we would like to have all the information we can get.

Doctor Raymond.—Regarding that I will say that I have had opportunities of observing inlays—porcelain fillings for teeth—a great many years. I was telling Doctor Price this afternoon that I have

seen porcelain fillings that had been in the mouth fourteen years, and I have never yet seen decay around them. I have seen the cement with the porelain broken off, and a great many cases where the cement is dissolved, so you could get a thin pointed instrument between the filling and the teeth, and yet there was no decay. I have seen some mouths where other fillings have been replaced three or four times and yet the porcelain fillings were preserving the teeth.

Doctor Hawley.—I would like to ask Doctor Raymond what location in the mouth these fillings were? I presume fourteen years ago fillings were placed in different localities from which they are now put in?

Doctor Raymond.—Doctor Land was no respector of location. I might say that the work was not done then as it is done now, or hase been done in the last three, four or five years; still Doctor Land is very successful, although he has not always had the patience to do the work in the best manner. He is anxious to get back to the laboratory, and do more experimenting.

Dr. J. B. Beauman, Columbus.—It has been said that porcelain was not perfectly impervious to the fluids. I have worked porcelain for about fifty-three years. I have worked all kinds of porcelain, and there are some things about porcelain that I don't know yet. I have tried many experiments, and have had many and funny experiences. I think you all will in the next forty or fifty years. Porcelain, any kind of porcelain, is not impervious to the fluids unless it has an absolutely glazed surface, or until the body of the material is brought down to the consistency of glass, which has a glazed surface all over, and you can grind it and it will still be impervious to the fluids; and if you take porcelain of that consistency, and then grind it, it is more or less porous, and so, as has been said, it is impervious.

I have had many porcelain fillings to handle, and I have had great experiences. I have had porcelain fillings that seemed to be well baked, but after a wear of forty years have almost wholly disintegrated and gone to pieces; that is something I could not account for. I have found many porcelain plates that stood intact even longer than that. I had a very funny experience in mending a continuous gum plate. I undertook to mend a continuous gum plate, and it was chipped and cracked, and I went to work and put on some material and put it in the oven, and it appeared to be baking well, and when I took it out the whole body of that continuous gum material that had been put on there turned to powder and came from the teeth as free as though it had never been put there. Washed right off clean. Now, if you can tell why, you can do more than I can.

Dr. W. H. Todd, Columbus.—I want to finish that statement by saying that it was one of the plates I made, and I never used anything but Close's body.

Dr. H. L. Ambler, Cleveland.—I quite agree with Doctor Byram in taking impression of cavities. I believe that in those cases where you have an opportunity to take a correct impression of the cavity it is

all right; but where on account of lack of space and the shape of the cavity that you are liable to change the location of your inmpression in removing it, and as long as that cement remains in there, longer than practical in many cases, it will change relationship and you will have an impression inlay when you attempt to adjust it to the cavity.

Doctor Byram.—I feel somewhat embarrassed after Doctor Goslee's flowery speech, but I assure you that I appreciate your hospitalities none the less. I believe the time has passed when Ohio and Indiana dentists know the State line and even though I come here as your guest, I feel that I am one of you.

I wish to compliment this society on its good record in taking in new members. I have been boasting that our association held the record; but I am now ready to take my hat off to this society, for it has gone ahead of us.

As I said in my paper, I think the time has not yet come for us to assert ourselves in favor of one kind of porcelain. Let us try to select the best from all. It makes no difference which form of porcelain one uses if one accomplishes the best results. What may be the best material in one man's hands may not be in the hands of another. Simply because the majority is on one side it does not follow that the majority should specify the materials to be used.

I wish to congratulate Doctor Goslee on his paper. We have discussed both papers since they were read. I think you will find that our ideas are somewhat the same—we try to get the best out of all methods and from all materials. There is one point in Doctor Goslee's paper to which I wish to call attention, the use of porcelain for occlusal surfaces of crowns and bridges. I believe porcelain crowns and bridges give better masticating surfaces than gold porcelain crowns or bridges with their occlusal surfaces of gold.

Doctor Callahan.—Why?

Doctor Byram.—Because gold on the occlusal surface of crowns and bridges wears very smooth and slick, and it is hard to keep food in proper position during the process of mastication. For this reason, inlays are especially applicable in large cavities in molars, and especially in the inferior molars for esthetic reasons. I construct as many inlays for large cavities in molars as I do for approximal cavities in incisors.

I can hardly agree with Doctor Raymond when he says the time will soon come when all cavities in incisors and cuspids will be filled with porcelain.

There are two points to be considered in all dental operations; first the mechanics, and second, the esthetics. A filling may be ever so well constructed, and the cavity esthetically filled, but if the conditions are such that it will last but a short time, then it is not practical. In many cases on account of the mechanical conditions, I believe it is not best to insert large porcelain fillings in incisors or cuspids.

Doctor Raymond says that high-fusing porcelain is stronger than the Jenkins porcelain enamel. I do not believe the Doctor has thoroughly tested the porcelain, or he would not have made the statement. The

Jenkins enamel has the advantage as far as crushing strength is concerned. It is more homogeneous in texture; it is denser and harder. I had an appliance made to test the crushing strength of porcelains. I find that the Brewster enamel will resist a greater force than the foundation or Close's body. Its density is greater than either of the others.

There have been several statements made regarding the transparency and opacity of porcelain. I seem to have different views from most of you, regarding the transparency of porcelain. When we speak of natural teeth being transparent, we are drawing the line rather close. While there is some translucency to the teeth, they are not transparent in the sense in which we speak. The opacity of the Jenkins enamel gives it an advantage over the high-fusing porcelains in that the cement will not change the color of the inlay.

Doctor Molyneaux mentions the advantage of taking the glaze off porcelain by grinding because it gives it a more life-like appearance when placed in the mouth. This is another advantage of the Jenkins enmel over the high-fusing. On account of its density it does not take a high glaze like the high-fusing porcelain, and if ground it will take a higher polish.

I cannot agree with the Doctor who says the best results are obtained by burnishing the matrix directly into large cavities and then fusing the porcelain without further burnishing. I tried to explain that the larger the mass of porcelain to be fused the greater the tendency of this mass to form a spheroid and the necessity of reburnishing the matrix in the cavity before the porcelain is extended to the margins.

I have never used enamel rods but have used crushed porcelain. I do not use it to prevent distortion of matrices so much as to control shrinkage. A good way to prevent distortion of the matrix is to make several centers of shrinkage and allow the different portions of porcelain to fuse from different centers.

I cannot say from many years of experience just how long inlays will last. I have been constructing them for four years. I am perfectly willing to take the statements of men of reputation and men whose veracity I have no reason to doubt, when they say inlays last for a long time and when they make statements similar to those made in my paper regarding the recurrence of caries. I take it for granted that they know of what they speak. Doctors Land, Head and others have written articles along this line and with my limited experience I was lead to make the statements in my paper.

Dr. H. J. Goslee, Chicago.—I desire to state that I am highly pleased with the reception accorded my paper, and also with the cordial welcome that has been extended to me. I should like to be able to enter into the discussion of the three papers to a considerable length, but as the ground has already been so well covered, I will not go into it to any great extent.

In my own paper I made an assertion with regard to the hygienic properties of porcelain as compared with gold. I spoke only of the

SURFACE, however, if you will remember, and quoted a statement from Dr. Wilbur F. Litch to the effect that in his opinion porcelain was a porous material, and that it did not possess hygienic properties equal to those possessed by a highly-polished surface of gold or platinum. I took exceptions to that statement and made the counter statement that in my opinion the *surface* of a well-vitrified piece of porcelain offered less opportunity for the penetration or absorption of secretions than gold or platinum every so highly polished. If you grind *beneath* this vitrified surface, however, you do get a structure more porous than metal, but I speak only of a highly-vitrified surface—a surface that has not been ground. The point I made was not so much as relates to the physical properties of either of these substances, but only to mention with some degree of emphasis that the surface of porcelain always remains cleaner in the mouth than does that of any of the metals. I believe that if you will look into it you will find that the surface of porcelain always presents a much more hygenic condition than gold or platinum, and particularly gold.

Doctor Wilson said that he did not give any special preparation to the hard places in the impression and that he paid no attention whatever to the soft places in the mouth. In this connection I feel that the retention and stability of a denture is due altogether to uniform contact with the tissues upon which it rests. To get uniform contact, or an equilization of pressure, we must bear in mind the varying conditions of the tissues upon which the denture is to rest, and to prepare the hard and soft places in the impression and model as to enable us to obtain this.

In speaking about the use of platinum solder in the construction of bridge and crown-work, I think I was taken to task by some one in the discussion as to the advantage of platinum solder over pure gold. The individual parts of all crowns can be soldered with pure gold if they are in absolute contact, and if the gold is properly fused it becomes alloyed with the platinum in such a manner that the parts could not be separated.

I think the object of Doctor Byram's paper has been thoroughly covered. The adoption of *certain* methods is of great importance, and in the minds of those who have not already adopted a certain line of procedure it may be questionable as to which method they should take up and become familiar with. It is my experience, however, that we cannot depend upon any one method. In the adaptation of matrices to simple approximai cavities I prefer to burnish, because you can burnish to an accurate adaptation better and much more quickly than you can take an impression. But in cavities of large proportions, and particularly in posterior teeth. I prefer to take an impression, make the dies, and swage the matrix.

Those who have experimented at all will agree with me in that it is a very difficult matter to closely adapt platinum to large cavities. You can facilitate the adaptation in this calss of cases by swaging first, and then after the first bake placing it in the cavity and burnishing directly to its walls.

When considering the relative value of the high and low-fusing bodies, in so far as pertains to strength, I feel that we can get all of the *required strength* with either. I am not prepared to say that the low-fusing bodies possess a greater degree of strength than the high-fusing bodies, because I have not made scientific tests. I agree with the doctor in that the more homogeneous the mass, the greater the density, but whether density imports crushing srength or not I am not prepared to say, and hence I would not like to go on record as saying that low-fusing body is in any manner stronger than high-fusing body. I feel sure, however, that either is strong enough for our purposes.

I want to say something in reply to the question as to the permanency of porcelain inlay work. I have seen porcelain inlays made by Doctor Jenkins, which have been in the mouth fourteen years, and while they showed a partial dissolution of some of the ingredients or flux, yet they were doing good service, and caries had not recurred around the margin. In my own work I have inlays that have been doing good service four or five years, and are still in a good state of preservation.

I wish to thank you for your courtesy.

Doctor Goslee.—I fear from what Doctor Custer said in regard to burnishing that the idea might prevail that I bring the instrument that I burnish with in contact with the matrix, but one should seldom bring the instrument in direct contact with the platinum in burnishing.

Dr. L. E. Custer, Dayton.—There was one point brought out in my paper that did not seem to be plain,—and that is the use of the pellet of cotton for pushing the matrix in the cavity. It is not the material, it is simply the process of applying the same which will communicate the force fairly equal to all parts—to all margins; it might be anything—it might be the rubber end of a lead-pencil. The point was to have some material which would produce an equal force all over and adapt the margins at the same time.

The point has not been brought out, and I will speak of that at this time—that is the etching of the inlay prior to its setting. That is an important point if care is pursued. Make the foundations for inlays of Close material, and then finish with Brewster enamel. The Close material is coarse-grained and when etched makes a better retention than if the whole inlay were made of Brewster enamel, or even with Brewster foundation.

In reply to Doctor Fuller, who spoke of applying heat to the under surface of the matrix: That is a matter I have not had any actual experience in—don't know just what effect in general practice it has —I can't say; but there is no question but what if heat is applied to the under surface, the porcelain begins to fuse there first and gradually as the heat increases the upper surface will be melted, and you would have complete adhesion to the platinum. The question arises whether or not the platinum would not be strained just as much by that as if

it were to melt and make an effort to assume a globular form, and leave the matrix at the edges to be filled in at the next baking.

It may be one of the most important points of all of the fundamental things—the adaptation of this which Doctor Fuller has brought out, and it will be one of the first experiments I make.

I believe that burnishing is not the proper way to adapt the matrix to the cavity. It was said in the paper that the minute you apply the burnisher it endows the platinum with life and temper. It is the continued pounding of the body of the metal that puts it in a state of spring, and so it is in the adaptation of the matrix for an inlay. It should not be repeatedly burnished; it should be gently pressed against the walls of the cavity, and if that is done there is no danger that that part of it will go back to its original form. Placing it once against the cavity wall is sufficent, and if you pass a burnisher over it you will find it endowed with life. It should be often annealed.

Now as to the use of rods. I said that the plan which I followed was to select one sufficiently long so when you drop it into the matrix it would lodge against the sides before reaching the bottom.

One of the most practical uses for the porcelain filling is in the large posterior cavities. Some cavities are so large and some distances under the gum as almost to preclude the use of a crown or a filling. It is a simple procedure to take an impression of that, and take it to the laboratory and finish that inlay by the swedging process and returning to the cavity and cementing it in. I think that is the most useful place for the porcelain, in the posterior portion of the mouth.

PRESIDENT'S ANNUAL ADDRESS.*

BY DR. T. M. WELCH, WAUPON, WIS.

When I look over the past and the present attendance of our meetings, it seems as if every member of this society should deem it his duty to interest the profession at large in doing something toward increasing our membership.

While results already obtained in the line of dental advancements should be very gratifying to all of us, it should be the duty of every legitimate practitioner to join hands with us so as to get the best clinicians, the best essayists every year. For no matter how well versed in dental science we may be, we all can absorb new ideas which will enable us to lay plans for a future of greater activity and usefulness.

Again, the larger and more intelligent an audience we have, the better talent we can command. Any man who undertakes

*Read before the Wisconsin State Dental Society, 1903.

to write a paper, likes to present it to a large and appreciative gathering, and it is but courtesy on the part of those who invite him to give him the presence and attendance of all.

I will not attempt to take up your time, so will give a hurried review of something accomplished the past year through our State society:

We have heard more or less contention every year on dental legislation. As you all know, Wisconsin, for a number of years, has been one of the few States whose laws require that licenses should be granted without any examination to all graduates of reputable dental colleges, and has permitted any and all persons of whatever fitness, or lack of it, who might choose to do so to come before the board of examination for license.

The neighboring States, in fact, most of the States, were requiring examinations of everybody under the new laws and many of them admitting none to examination without a diploma from a reputable school or a number of years' practice.

Our State was beginning to be the dumping ground for all graduates who failed to pass examination in other States.

At the last meeting of this society, after a discussion of the subject, it was decided to appoint a committee of five who were instructed to draft a proper dental bill and secure its passage before the legislature of 1903.

The resolution was adopted, and there was to be a representative from each of the two dental colleges, one from the State Board of Examiners, one from the State society, and a member from the State at large. The committee will undoubtedly make its report, to which your attention will be called later on.

The committee appointed consisted of Dr. Charles L. Babcock, chairman, representing the Wisconsin College of Physicians and Surgeons; Dr. C. F. Lauderdale, representing the Milwaukee Medical College; Dr. W. C. Cudworth, for the State society; Dr. C. C. Chittenden, for the State board, and Dr. A. H. Gillett, for the State at large.

The law secured has been pronounced by many who are familiar with all the various laws of the country, to be one of the best on the statute book of any State.

The committee has necessarily incurred some expense which it should be the duty of the society to meet cheerfully and

promptly. They are to be congratulted upon the efficient manner in which they have performed their duties and I wish to take this opportunity of thanking each member on that committee.

THE TEETH OF CHILDREN.*

BY DR. CHARLES A. VAN DUZEE, ST. PAUL, MINN.

The preservation of the human teeth is of infinitely more importance than even the intelligent are often willing to admit. A lack of appreciation of this important matter is certainly no excuse for neglect. The dentist who does not practice his profession with the above facts clearly and constantly before him, is not only guilty of a crime against humanity, but is doomed to have the word "Failure" engraved upon his tombstone.

CRITICAL PERIOD.

The critical period in the lives of our patients is during the years which lie between early childhood and maturity, and nine-tenths of the damage, if not more, occurs early in childhood. It is, therefore, of the utmost importance that not only the dentist, but the parents, are fully impressed with the dangers surrounding this period, and that the grave errors and disastrous consequences of neglect at this time should be clearly placed before everyone.

NEGLECT.

The dentist who devotes his years of practice to the repair of the tissues of the mouth destroyed by the ravages of decay or disease without a thought of combating the original causes, is equally guilty with the parent who permits the child to suffer through life for want of intelligent care during the critical period.

The proper digestion and assimilation of food is dependent upon proper mastication, and no life is perfect unless this fundamental principle is observed. It is not possible for the human body to be developed and maintained in its full glory and perfection if the food from which it receives its nutriment is not properly prepared for digestion by thorough mastication. The whole life of the individual is influenced for good or ill by the condition of the teeth, and aside from the question of heredity no one factor has so great an influence.

*Read before the Wisconsin State Dental Society, 1903.

IGNORANCE LAID AT THE DOOR OF THE DENTAL PROFESSION.

The ignorance displayed by the average parents in all that pertains to the welfare of their children's teeth, is deplorable. The suffering which results and the loss to the nation through the impairment of the health and vigor of the people must be laid at the door of the dental profession. We cannot shirk this responsibility, nor can we hide behind the excuse that the people are apathetic. Why does this apathy exist? Why does this ignorance continue? And why are our energies and our resources exhausted in an attempt to battle with disease by laboring to repair the tissues lost through its ravages? These burning questions, which are of the greatest importance to the human family, not only of to-day, but of all future ages, can be answered only in part.

The people are apathetice because we have not educated them. Their hearts are filled with fear and dread of us, and those children whom we should reach, conceal their ills until pain drives them to us. These conditions could all be changed if the ignorance which prevails might be changed to helpful intelligence. It is easy to ward off in great measure the distressing diseases which drive a suffering people to our offices, and it is easy to repair the broken teeth if we could see the children early and frequently. One of the greatest obstacles in our pathway is the fact that we do not see these children until they are in a condition where more or less pain must accompany our efforts to relieve them.

OPERATIONS PERFORMED FOR CHILDREN.

The operations which we perform for our child patients must necessarily consist of those that are simple and nearly painless. Extraction is seldom called for until nature has nearly completed her efforts to cast off the temporary teeth. No pains or effort should be spared to avoid everything in the nature of bodily or mental suffering, and we can console ourselves in some measure for the loss of time and money by remembering that we are paving the way to greater ease and saving of time to both patient and operator through the added care, kindness and skill which must be exercised in this class of work. Every careless infliction of pain, every thoughless exhibition of impatience, every frown or harsh word is like foul seed sown upon good ground. It will surely bear fruit of the most distasteful kind

and must eventually make our work harder and our failure in after years more pronounced. Every kind word and act, every lost moment and every self-sacrifice, if judiciously expended, will just as surely return to us like bread cast upon the waters and will insure everything that is desirable in the later years of practice.

NOT JUSTIFIED IN MAKING PERMANENT OPERATIONS.

We are not justified, except in rare cases, in attempting the more permanent operations for young children. In my opinion, aside from the reasons mentioned, the placing of the so-called permanent fillings in this class of cases is seldom indicated. We will consider some of these matters a little in detail. The average amalgam filling placed in young teeth is often of questionable value, speaking by comparison, and I would far rather resort to gutta-percha, the cements or tin in many cases. The fact that the cements are frequently not as durable as we or the parents might wish is more than outweighed by the saving of tooth structure, vital energy and temper of the patient. It is possible to do greater good with less suffering, to accomplish more with less wear and tear to both patient and operator with the cements than with any other material in a wide range of cases. When we come to the children of older growth cement must be used with great care and judgment, and I am free to say that it has been abused and misapplied to a distressing extent. In the bicuspids the greatest danger lies, and yet this field is one that is capable of great accomplishments.

A WORD OF WARNING.

For many years I have handled these cases in a way that I have not seen in print. You will all agree with me that it is most desirable to preserve the pulp in a healthy condition in these teeth. Some of you will also agree that the interproximate space and tissues are of equal or more importance. Others may be willing to admit that in many cases amalgam will but pave the way for loss of pulp and of the interproximate space and tissues, and will bring us face to face with that last resort—crown and bridge-work—in much less time than we usually care to admit. Extension for prevention has gained such a wide circle of supporters that it is often applied at once to young bicuspids. If it were possible to so place gold or amalgam that

we could look for many years of usefulness from such fillings in these teeth, perhaps we might be justified in practicing this method *at once;* but we cannot be assured of this and we are not able to promise it to our patrons; and for this very reason I would not only sound a word of warning against their indiscriminate use as above stated, but would ask you to consider the methods which have given me great satisfaction in many of these cases.

METHOD OF PROCEDURE.

In the young bicuspids we have frequently decay involving the occlusal pits and fissures and small areas just below the points of contact. The interproximate spaces have not been lost or the tissues therein greatly interferd with. At this age, and in these teeth particularly, we often find the progress of decay has extended between these points beneath the marginal ridges. Three separate fillings will not meet the requirements. We must sacrifice the ridges, and this brings us to the key-note of my argument.

Why sacrifice all the substance of the ridges? It is my practice to preserve the point of contact even if not perfect, and, joining the areas of decay toward the lingual portion of the embrasure, to reinforce these weakened walls by a cement filling, watching it carefully as the months go past until the decay has been arrested and the patient carried on to maturity; and I am usually enabled to then place a filling of gold or amalgam in such a tooth which, to my mind, has been carried through the critical period of its existence and is in much better condition to respond to my greatest efforts than it was before. When the decay has progressed to the later stages before we see the case the conditions are entirely different. We have lost the points of contact. The interproximate spaces have become partially or wholly obliterated, and the soft tissues are more or less destroyed. Remember, we are still dealing with young teeth. The occlusion has gradually adapted itself, and the changed relations of the teeth have produced a condition that requires the most careful consideration. Our plans must be made for the future. The present is a condition of serious disease.

The man who expects to restore such a case by the hasty insertion of a low-priced filling, and the parent who expects such service are both doomed to disappointment, and the patient is

surely most unfortunate if such methods are adopted. The points of contact cannot be permanently restored at once. The interproximate space and the soft tissues must be restored; the rearrangement of the occlusion must be accomplished; and, finally, pemanent fillings with points of contact may be inserted. These things take time, and time is money, perhaps more exactly in dentistry than in any other calling.

SLOW SEPARATION.

I have been greatly pleased at the results obtained from slow separation accomplished by the use of gutta-percha in the form of the pink base-plate. The pulp should be most carefully preserved and protected and the crowding upon the gingival tissues prevented; and this can best be accomplished by the use of varnish or some form of cement over the area of the pulp, with temporary fillings of cement or amalgam in the axial portion of the cavity, with the wedge of the base-plate supported thereon. The use of the space-guards of the dental depots, or one of gold or German silver, which can be improvised, is of great value where indicated, and the greatest pains should be taken that we gain the exact results which are required if a perfect operation is ever to be accomplished. The placing of a crown in this class of cases should be considered as a last resort and should never be permitted except where other means are clearly impossible. In this connection I wish to state that in many cases the restoration of the interproximate space before crowning is clearly indicated and yet is seldom undertaken.

EDUCATION OF THE PEOPLE.

I desire before leaving this important subject to direct your attention to the educational aspect of the question. You will all admit that a vast amount of ignorance exists upon the part of the parents of the present generation of children, and that we cannot hope to complete the education of the general public to a point that will overcome the present conditions entirely. Our efforts must not be relaxed so far as the parents are concerned, but the greatest good can be expected only by a just appreciation of the needs of coming generations; and it is along the lines of a comprehensive course of instruction aimed directly at the children of the present day that the greatest good can be obtained. Every scholar in the public schools should

receive a thorough course in oral hygiene, and be impressed at the earliest opportunity with the great importance of their teeth and of the danger of neglect. They should be carefully instructed in the methods and care which can alone prevent the suffering and damage which so surely follows neglect. If it were possible to place upon our statute books a law which would compel every parent to see that his children's teeth were properly cared for and to provide for infirmaries where the services of competent dentists could be had for the children of the poor, and to place the whole matter in charge of a corps of capable inspectors, the result would be of inestimable value to the human family; and the effects of such wise legislation would be stamped upon the children of future generations in characters that would be easily recognized by even a superficial observer.

The question of education has been agitated for some years, and in the older communities it has gained some ground; but its great importance is not generally understood. I venture the assertion that the evil which has resulted to the human race from smallpox, diphtheria and scarlet fever combined, is not of greater magnitude than that which is following to-day the neglect of the human teeth. We have laws for the control of the ravages of the diseases first mentioned and to protect the people from those who are contaminated. We have hospitals and places of detention and other safeguards. We have public officers whose duty it is to see that these instruments of protection are properly employed. The State fosters the scientific investigation of these diseases, and puts a premium upon everything which would tend to protect the people along such lines. What have we accomplished in our field?

It is a generally accepted fact that laws, methods and the machinery for their application follow the recognition of a demand for such things. It is clear, then that the first step in the solution of our problem is along the lines of a more comprehensive and general education of the people; and, as I said before, the proper place to begin is among the children of the present generation. We may look for valuable assistance from the parents, and in the matter of laws and the introduction of systematic education we must depend largely upon them. Rome was not built in a day, but when the builders had conceived the necessity for the work, and had laid the first stone, there was not

lacking the energy and persistence which led to its completion. We are the builders, and I do fear but that you will grant the necessity for the work. The first stone has been laid, and it lies with every individual in this room to see that the work is carried to completion.

DISCUSSION.

Doctor Babcock, Milwaukee.—The question of the education of our patients, meaning by that both the parents and the children, is certainly one of the utmost importance, and I have often questioned what is the best method of going about it. Seems to me that there should be proper, thorough instruction given in our public schools of the princples of oral hygiene. In thinking of that, however, it occurs to me that dentists are not altogether agreed as to the best method or principles upon which oral hygiene rests, and I believe that it is true that dentists need some further instruction along this line. It may be, perhaps, that they don't need so much instruction as they do need to be impressed with the importance of the matter.

The question of the retention of the deciduous teeth to approximately the time when they would normally be lost, to maintain the space is of vital importance. We need to maintain the space for the further development of the jaw, and even if we fill the teeth with cement or amalgam, it should be retained. I notice that many do nothing toward the retention of this space. I use gutta-percha, believing I can maintain the space better than with amalgam. I change it frequently and do not leave it in for a long time.

Doctor Wenker, Milwaukee.—The doctor spoke of the prevention of decay by educational means—educating the parents and children throughout the schools by teaching them oral hygiene, but I would go a step further and say that the people in general and the people at large should be educated more in general hygiene. They should take greater interest in the welfare of the body; until greater interest is shown by our teachers in their own health we cannot expect so much from oral hygiene in our school. Therefore I say let us teach our teachers both by precept and example until they become enthusiastic in this subject, and live up to the laws themselves then we may hope for results.

Doctor Babcock spoke of gutta-percha when used in proximal cavities infringing upon the gums. In cases where two cavities appear in the same interproximal space, I would span across with a piece of metal to prevent the gutta-percha from infringing on the gums.

About handling children in the office, I believe much can be done with them by getting their minds off the work, and keeping them interested. Tell them fairy stories—most children are very imaginative and when we transform the work into play they immediately become interested and take enjoyment in the performance, and in that way one can do very much more with them. By careful management and the avoidance of

pain these first impressions can be kept alive and active. During this time the mental stamnia of the child can be built up and thus lay the foundation for a good permanent patient.

Doctor Maercklein.—I have not much to say on the subject, though I do not agree with the essayist on all points. The paper covers the ground very thoroughly and perhaps it is a matter of individuality instead of dentality with which I do not agree.

I do not agree with filling the tooth with gutta-percha. I don't like gutta-percha as a filling for children's teeth. It gives no end of trouble. It is almost impossible to have the parents of children understand that they must come in and have that filling looked after frequently. I pin my faith to a good amalgam filling on the proximal surfaces of those teeth. Put a small matrix between and fill in full of amalgam, have patient return the next day and fix the edges. So far as the compression of the interproximate space is concerned, I do not think much stress may be laid upon it. That is not of so much importance. I lay the greatest importance upon the compression of the second temporary molar, to keep that in place until the first permanent molar appears. You can extract the first baby molar, but keep the second molar in position

The practice of filling permanent teeth with gutta-percha is perhaps admissible in some particular cases. If you want separation, I know of nothing better than pledgets of cotton dipped in chloro-percha, leave it a few days, and continuing a few times, you can get all the separation you wish.

The matter of educating the public cannot be forced. No education can be forced. The boards of examiners will testify to that. You cannot force ethics, religion or anything else on the people. It is a matter of growth.

When should the education of the public commence? Someone has said when the grandmother is a baby education should commence. All right, we will commence at the baby, and when this baby now is a grandmother, we can expect some results. Educate the mothers if you want the child taken care of in dentistry. The mother is the person that looks after the child. The father is of necessity out in the world laboring with trusts, State boards, and the Lord knows what, and he has no time to look into the child's mouth. He has of necessity to battle with the world, and his living is very often scanty at that. If the mother is educated, if she understands these things, she will do much for that child of hers.

Speaking about the fruits of education, this society spent some hundred dollars several years ago in the publication of a little pamphlet by Doctor Holbrook, and I do not know that it has ever done much good. The education of the people is proper, but it requires a growth. The children we are educating require to grow up, and in about the next or second generation we can reasonably expect good results. The deficiencies that now exist in our profession cannot be eradicated by the sweep of the pen—there has got to be a growth.

Dr. E. C. French, Eu Claire.—I am going to say I am a great believer in educating the people, but the first thing you do is to educate the

dentists to know how to handle these cases. I am working for the third generation now, and I commenced with the first of the three. Now I am taking care of the children's children, and I notice those upon whom I impressed the importance of the care of the teeth when they were children, had the grandchildren brought to my office very early.

Doctor Van Duzee.—I have not found anything that I wish to object to in any of the remarks that have been made, but I want to offer a little explanation touching the point of education, at this time. I realize very fully the instruments of education in our hands are imperfect. Our opportunities are few. A great deal of work should be done. For that reason I am writing a book which I propose to publish—things I would like to tell my mothers and fathers and children, and I am putting it where they can read it.

I do like gutta-percha, and we are all striving for the same end, and it is immaterial what means we use to accomplish the result. One gentleman said, "I will pin my faith to a good amalgam filling." So will I. But we have a good many cases we cannot fill that way.

But returning to the question of education—what have we done in our field? What has the dental profession done? The people should be educated that the human race is suffering from a lack of knowledge of those things which to us are matters of every-day life. What have we done? These things are a matter of growth, but you would not expect to raise potatoes unless you planted the seed, or without water, without being weeded—so I say the dental profession is negligent; we haven't done what we should to make these things grow. Now we educate the mothers. The doctor says that is the place to tackle the proposition—it is a good place. How does the mother know how to sew? To carry on her social duties? She knows because she was taught as a child to do these things. So take the children of to-day, teach them what to do and they will go home to their mothers and set the mothers to thinking.

We are negligent in this—that we haven't infirmaries in our cities. If you have a poor child in your community who is suffering, and the gravity of that suffering is not appreciated in the home, there is not a place in this country with the exception of two or three where that child can be taken care of. Why? Because we haven't brought the thing before the legislature. I succeeded in getting a bill through our legislature because I knew exactly what I wanted, and I didn't ask for anything but what was exactly right. If you gentlemen will put your shoulders to the wheel, and the gentlemen of Minnesota, we can have infirmaries in the large cities. I believe the people have all the money they need. Wisconsin and Minnesota are in better shape to-day to pay just fees for service than ever before.

A SUGGESTION REGARDING INTERCHANGE OF STATE CERTIFICATES.

BY DR. H. G. PATTERSON, BOISE, IDAHO.

I would suggest, that the State Board of Dental Examiners, of every State in the Union that has not already done so, take up and consider the interchanging of State certificates.

In the first place, I believe that it would be just and right to the members of our profession. We have a number of States that now interchange their certificates, and it seems to me that if A is practicing in one State and has a certificate, granting him that right, and the Board of Examiners when granting this certificate to A, says by so doing, that A has the required qualifications, and is competent to practice dentistry in that State. Now if A is qualified to practice dentistry in that State, he certainly is competent to practice dentistry in any State in this Union. It does not seem right, to me, to see a man holding a certificate, have to undergo an examination, every time he wishes to go from one State to another. I have heard some argue, that if a man knew that he would not have to pass but one examination, that he would stop his study, and would become rusty, and not keep up with the times I do not believe that this would be the case, for we all have too much pride and take too much of an interest in our profession, and in our practice, to allow ourselves to get into such a condition. But if there should be one so unfortunate as to allow himself to become so degenerated, then he would not last long as a professional man, for we are living in an age of progress, and the man or woman who does not study and keep up with the times must soon step down and out of the ranks. It takes a lot of hard, diligent study for one to keep up in his profession, and although he may never pass but one examination, he must continue to study.

CURRENT ARTICLES

PUTRESCENT PULPS AND THEIR TREATMENT.

BY DR. A. F. STRANGE, SPRINGFIELD, ILL.

The causes of putrescent pulps I have divided into four classes: (1) Mechanical; (2) Thermal; (3) Infection through caries, and (4) Lack of nutrition.

(1) Under mechanical causes may be mentioned blows, biting threads, too rapid movement of teeth in regulating, etc.

(2) Thermal. Usually fillings which too closely approximate the pulp without sufficient intermediate lining, although I have known smokers to destroy pulps in seemingly sound teeth from the heat of cigars and pipe-stems.

(3) The most common cause is from infection through decay, subjecting the pulp to exposure, irritation, inflammation, hypertrophy, suppuration and death.

(4) In a few instances we find the pulp dead without any apparent cause. In these cases the health of the patient is generally below par, the nutrient function impaired, and upon closer examination, we may find calcific deposits in the pulp chamber or in the pulp itself, or upon the apex or root, cutting off its vascular and nerve supply. I have also noticed a few instances which I could hardly place in either class, where I have concluded that it must be due to infection entering the pulp tissue through the apical foramen.

Under a filling a putrescent pulp will cause a throbbing pain and the tooth becomes unusually sensitive to pressure. The application of heat will increase the pain (by the expansion of the gases), while cold will reduce it, the action on a vital tooth being just the reverse.

There is invariably a septic condition present at the apices of

the roots, and frequently a necrotic condition of the pericementum, with possibly a disintegration of the alveolar process.

The decomposed pulps of the deciduous teeth seem to become more vile than those of the permanent. The breath of the little patient has an odor strong enough to permeate the air of the entire operating-room. They require much more time and patience, and are more difficult to cleanse and treat than those of adults. Often it is impossible to apply the rubber dam, and owing to the restlessness of the little one it is very hard to exclude the fluids of the mouth.

In adults there is seldom an excuse for not applying the rubber dam and the success that follows our efforts is largely due to this one simple step, for we all know that there are numerous specie of bacteria always present in the oral secretions and upon the moist mucous membranes of the mouth, some of which seem to be normal inhabitants. The conditions of temperature, moisture and presence of organic pabulum are extremely favorable for their development that it seems impossible to destroy or to remove them.

The important step in the treatment of such canals is the careful removal of the contents, opening up tooth with chisels or large burs, using great care to avoid all pressure that might force contents through apex, thus setting up an acute case of pericementitis.

The contents of the canals should be as nearly sterile as the use of antiseptics will make them before removal. This will require a great deal of care and skill.

In using an antiseptic we should not employ anything of sufficient strength to be of itself a source of irritation, weakening the defensive power of the pericemental tissues, nor anything that would be so coagulative as to block the escape of gases and toxins, thus forcing the septic matter through the apex of root. Something should be used that possesses great penetrative power. All such antiseptics should be applied in such a manner as to permit of gradual absorption into the infected area, solely through capillary attraction with an entire absence of pressure. For this I should recommend the use of formalin following with an alkali such as hydrogen-dioxide or sodium-dioxide. They, in contact with decomposed organic matter will cause a chemical reaction. with quite a noticeable effervesence, leaving the debris in a condition that can easily be washed out. After this careful and thor-

ough cleansing, the canals should be thoroughly dehydrated by means of alcohol and a plentiful supply of as warm air as the patient will bear. The mouths of the tubuli are thus opened so that the fibrillæ can be more easily acted upon.

AN EFFECTIVE ANTISEPTIC DRESSING.

We are now ready for our antiseptic dressing. For this I am now using oxpara with gratifying results. Oxpara is a composition of formaldehyde, thymol, burnt alum and creosote, a powder and liquid which should be mixed to a creamy consistency, and inserted upon a few threads of antiseptic cotton or bituminous paper. Upon the return of the patient, if there has been no pain, I remove the dressing, dropping it into a little peroxide of hydrogen and if there is no effervesence the canals may be filled with safety. As a canal filling I have for some time been employing (in teeth of this condition) a combination of oxpara and carbonized cotton, which is a good quality of pure antiseptic absorbent cotton saturated with boric acid, placed in an iron retort, which is then slowly raised to white heat, the cotton being gradually reduced to carbon. This should be held over a Bunsen flame and thoroughly sterilized before using as there is no danger of burning it. When dry it readily crumbles and is difficult to work, but in combination with oxpara it works easily and very satisfactorily. If for any reason it should become necessary to remove the canal filling, all that is necessary is to moisten it with the liquid that accompanies the oxpara, which will so soften it that in a few minutes it may be removed with ease. I also insert a gutta-percha point in combination with the carbonized cotton and oxpara when the canal is sufficiently large to permit.

There are occasionally found putrescent pulps which are still quite sensitive upon touch of a broach, which require a quite different treatment before following out the treatment as just described.

We find that arsenic is of very little service in further destroying the sensitivity, as the blood vessels are so engorged and the circulation so impaired that it is not properly absorbed. For such cases a mixture of tanic acid and glycerine will in a few days so toughen and tan the pulp that it may be removed entirely and with little or no pain, after which the treatment would be identical with previous description until ready for filling or crowning, as the case may be.—*American Journal.*

SUGGESTIONS

A MODIFIED NEEDLE FOR PRESSURE ANESTHESIA.

J. A. Johnson, Indianapolis, Ind.

I have modified the form of the ordinary long reinforced hypodermic needle so that with it the local anesthetic used by me in extracting is made to do all and more than I could do with the saturated solution following the common method. In this manner I use analgine, which contains but one-half of one per cent. of cocaine: I dare say any similar solution would give the same results.

I find this method especially adapted to the treatment of children's teeth, for as a rule the dam cannot be used and all danger from the solution escaping into the mouth is eliminated. Every dentist will find in his cabinet abundant material with which to make the points to which I have referred and now will describe.

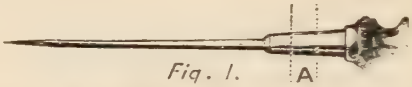

Fig. 1.

From the base of an old point, make a section which will be bell-shaped (Fig. 1, A). Selecting another needle remove the steel point and thread the end of the reinforcement to screw into the bell-shaped point just described, and the instrument is complete. Three of these points (Figs. 2, 3, 4) have answered in the

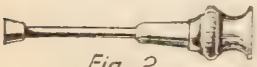

Fig. 2.

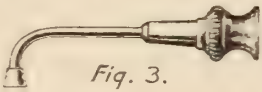

Fig. 3.

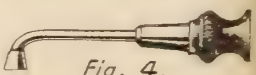

Fig. 4.

majority of cases. The angles may be changed at will by slight bending of the stems. It is unnecessary to say that these points are used with the regular syringe. In using this instrument, apply the dam where possible as an aseptic precaution. Dry the

cavity as well as permissable, apply Sanguestine chlorid (Lilly) or adrenaline, wiping the cavity with carbolic acid. Now from a sheet of unvulcanized rubber, cut a disk large enough to amply cover the point of exposure. With rubber-dam punch, make a small hole in the center of this disk of rubber, which you will now slightly coat with cavitine varnish or chloro-percha and place over exposure so that the central opening is directly over the point of exposure.

It only remains now to make application of the bell-shaped point over the hole in the disk and gradually get the pressure necessary to force the solution through the entire pulp. It is now almost a year since I adopted this method and trust others of the profession may have as good results as I have had in its application.—*Extract, Items.*

A HYGIENIC BRIDGE FOR LOWER JAW.

H. Brandt, Brooklyn, N. Y.

Suppose a case presents where two or three teeth in the bicuspid and molar region of the lower jaw are gone. To restore that side of the mouth a bridge will naturally suggest itself, and what we would expect of that bridge is durability, perfect occlusion and sufficient fulness to sustain the contour of the lower part of the cheek. We would not mind so much the show of gold, as it is unavoidable, unless saddle-back teeth are used, but we would very much like to be cleanly. Is it possible? Gravity says no; by gravity everything tends toward that part of the mouth and much of it remains there in mouths most scrupulously cleansed. Besides, you all know that the resorption of the alveolus leaves the lower jaw at times in such shape that it is not very easy to grind in teeth properly. I claim for the hygienic bridge

all the advantages and none of the disadvantages of the ordinary bridge.

The method of construction is simple. I proceed as usual in preparing the abutment teeth and make the crowns. I make soldered crowns while the patient is in the chair. I take an impression and bite with crown in the mouth, pour a model and articulate; then I find the proper teeth to fill out the space (plain rubber teeth) and wax the teeth together, giving the necessary slant and curvature and chill it well. I then make a mould of these teeth as they are together, in Mellott's moldine, and pour a Mellott's metal die; a piece of thirty-gauge gold of sufficient size for cusps and part of buccal faces of teeth is shaped to die by hammering die into lead block and then placing the gold between the die and lead counter-die and lightly bringing down to shape. I trim the piece to fit between the abutments and cut out my arch to suit the case; then adjust occlusion, wax up solidly, invest and solder and when finished properly and cemented in place, it is certainly a cleanly piece of work and cleanliness is akin to godliness. Figure 1.—*Items.*

PROTEST AGAINST OPEN-FACED CROWNS.

F. C. Royce.

I have given open-faced crowns a fair test, making them over metal dies, using 22k. gold, annealing well and burnishing the edges as close to the tooth as possible. The result with me was always the same; as a permanent piece of work it was a failure and in every case the bridge had to be removed and an anchorage made in some other way.

I have been called upon to remove bridges where the trouble was solely with open-faced crowns, the anchorage at the other end being a full gold crown always found in perfect condition.,

The workmanship in all the cases as far as I could see was good and satisfied me that they had come from the hands of good operators.

Now why are all these failures? It cannot be that it is the fault of the operators in all these cases, as their other styles of crowns were doing splendid service and the failure was always with the open-faced crowns. There is only one conclusion that can be drawn in the matter and that is, the method is at fault.—*Extract, Items.*

EDITORIAL

THE INTERNATIONAL DENTAL CONGRESS.

As the time of this great dental congress approaches, dentists should make arrangements to attend. It promises to be the largest and best dental gathering ever held. The various committees are putting forth every effort to make the congress a grand success and an exceedingly good program is in preparation. No one can afford to miss the papers to be read or clinics to be presented.

While there seems to be a sort of inactivity on the part of some dentists, others have been working day and night in the interests of the congress and they should receive support from every loyal dentist, for only through combined and undivided effort can the greatest results be attained.

THE DENTAL SUMMARY is publishing each month matters pertaining to the congress and every reader should keep posted on them and lend his aid to help along the good work. No true American dentist, with his profession at heart, will do otherwise than assist those who are giving their time and best efforts for the success of this International Dental Congress to be held in St. Louis, in August.

A VALUABLE SERIES OF EXPERIMENTS.

In this issue we present the first of a series of valuable papers on "Filling Materials as Barriers to Bacteria," by Dr. R. H. Volland, Iowa City, Ia.

Doctor Volland, not satisfied with the results of laboratory experiments, is performing a series of experiments in the mouth with the various plastic and other filling materials to determine which make germ-proof fillings.

No matter how carefully laboratory experiments are carried on, the conditions must be essentially different from mouth conditions and the results cannot be accurate. Doctor Volland in experimenting in the mouth meets conditions as they actually exist about the various fillings and we have every reason to expect results from these experiments more exact than any yet recorded.

These articles have been promised to THE DENTAL SUMMARY and will be the most valuable ever before presented along this line.

NEW PUBLICATIONS

IRREGULARITIES OF THE TEETH AND THEIR TREATMENT.—By Eugene S. Talbot, M. D., D. D. S., M. D., LL. D., Professor of Stomatology, Illinois Medical College; Honorable President Dental Section Tenth International Medical Congress, Berlin, 1890, etc., Author of "Interstitial Gingivitis, or So-Called Pyorrhea Alveolaris;" "Degeneracy, Its Causes, Signs and Results;" "Etiology of Osseous Deformities of the Head," Etc. S. S. White Dental Mfg. Co., Pub., 1903.

The unwritten law in general medicine, "that to know the cause is half the treatment," is also applicable in the treatment of deformed jaws and irregularities of the teeth. Believing in this law the author has devoted his time outside of office practice to this particular department of the specialty. Without the knowledge of the etiology no one can successfully correct deformities, the author says. In the preparation of the fourth edition the entire work was rewritten and rearranged with plenty of new material and new facts, the result of twenty-six years of constant research.

Regarding this, the fifth edition, the author says that since the fourth edition has appeared, practically no modifications of the general principles therein outlined have been made. The laws by which deformities of the jaws and irregularities of the teeth are governed had been worked out on broad scientific lines and hence made due allowance for individual peculiarities. Rewriting the work for this edition was hence deemed unnecessary. It was thought best, however, so to outline in an introduction the working of the developmental principles governing heredity and environment as to facilitate their application to the topics discussed in the different divisions of the subject. The abnormal eruption of the teeth into the facial cavities other than the oral has rendered a discussion of these cavities absolutely necessary for the purposes of the dental surgeon. Unless the development, teratology and pathology of these cavities be understood,

a clear, comprehensive conception of the relations of irregularities of the teeth is unattainable.

To those unfamiliar with the work perhaps a noting of the topics discussed will give them something of an idea of the vast amount of material presented and of what value the book is, not only to those especially interested in irregularities of the teeth, or malocclusion, but to the general practitioner who desires to keep pace with the progress of dentistry and its allied branches.

In the first chapter the author devotes seventeen pages to the history of observations on irregularity of the teeth, then takes up the subject of Heredity, following with Congenital Factors and Maternal Impressions; Post-natal Skull and Jaw Development and Periods of Stress; Development of the Cranium and Face; Development of the Jaws; Development of the Alveolar Process; Development of the Vault; Development of the Peridental Membrane; Development of the Teeth; Social Consanguinity Near-kin, Early and Late Marriage; Environment, Climate, Soil and Food; Race Admixture; Constitutional Disorders; Intellectual and Moral Defects; Inter-operations of Causes and Predispositions; Developmental Neuroses of the Face; Nose; Interior Facial Bones; Eye; Bones of the Ear; Jaws of the Seemingly Normal; of the Maxillary Bones; Vault; Palate; in Teeth Position; Local Causes of Teeth Irregularities—Upper Jaw; and Lower Jaw; Finger Sucking; The Degenerate Teeth; Surgical Diagnosis; Pathologic and Physiologic Changes; Surgical Corrections; Tables; Antero-Posterior and Lateral Illustrations of the Vault.

A well written work from which any dentist can obtain a fund of information. It should be in the library of all, and especially those making orthodontia a study or specialty.

SUNSHINE THOUGHTS FOR GLOOMY HOURS. By George H. Chance, D. D. S., M. D., Portland, Oregon. Price, $1.00. J. K. Gill Co., Pub., Portland, Oregon.

This is a little book of prose and verse written by Doctor Chance. As its title suggests, it is filled with verse full of sunshine; uplifting in its character, tender in sentiment, and containing many helpful thoughts and suggestions. The meter is good and the poetry shows that the author has a natural talent for the writing of verse.

THE AMERICAN SOCIETY OF ORTHODONTISTS. Second Annual Meeting held in Philadelphia in 1902.

We acknowledge receipt of this volume of transactions. It is indeed of great value, especially to one interested in this branch. The Society of Orthodontists are doing a grand work, and may it continue.

ANATOMY—A MANUAL FOR STUDENTS AND PRACTITIONERS. By Henry H. Hale, A. M., M. D. Second Series, edited by V. C. Pedersen, A. M., M. D.: Lea Brothers & Co., Philadelphia.

This is an admirably condensed work containing the essentials of this important subject. A book for ready reference and review work. A series of questions at the end of each chapter make it useful as a quiz book. Illustrated with seventy-one engravings. A handy volume of 389 pages, concisely written and covering the subject thoroughly.

A COMPEND OF DENTAL PATHOLOGY AND DENTAL MEDICINE. By George W. Warren, A. M., D. D. S., Professor of Principles and Practice of Operative Dentistry, Pennsylvania College of Dental Surgery. Fourth Edition, Illustrated: P. Blakiston's Son & Co., Philadelphia.

This compend contains the most noteworthy points upon the subjects of interest to the dental student and a section on emergencies.

It is intended as a guide and help in giving a systematic view of the subject to be studied in larger works and as a book for review, giving a thorough outline of work has been done. A useful and handy volume from which all may derive benefit.

CORRESPONDENCE

INQUIRY ABOUT PORCELAIN INLAYS.

I am writing to you for information as to the general verdict of porcelain inlays, in the east. Particularly as to the experience of the profession when using large contour, incisor inlays where at least half of the tooth is involved at the cutting edge. Has there been much trouble from chipping of either tooth or inlay at joining point? I am now doing more porcelain work than gold, but as yet have had little opportunity to observe these particular kind of fillings as I have only put in three or four, hesitating to put them in unless I know patients well enough to ask them to allow me to try this, where it is impossible to make a successful filling with gold, or in other words where a crown was indicated.

Any information on this point will be greatly appreciated.

Spokane, Wash. E. PITTWOOD.

INFORMATION WANTED.

I have a case that I wish some of the readers of THE SUMMARY would give me some information about. Mr. S. presented himself with a cavity in the mesio-approximal surface of right inferior first molar. There was no tenderness in pulp region, nor was there any tenderness in excavating. I inserted an alloy filling and about three weeks later patient returned with tooth very sore and tender to the touch. I removed the filling and found a fully exposed pulp. Why was there not any pain when I prepared the cavity? It is the only case I ever had of this kind and I don't quite understand it.

Burlington, Kan. R. H. KENT.

ANSWER TO APRIL INQUIRY.

In your April number I find under "Correspondence" an article headed "Information Wanted," from Dr. G. H. Edginton, Iowa.

Give patient internally ten (10) drops of adrenalin chloride, 1-1000 each day for seven (7) days, then put in an aluminum base with rubber attached teeth. Am quite sure you will find patient able to wear his teeth then. The adrenalin cloride will not allow the gums to bleed, and the aluminum base will be much more soothing and less weight for the tissues to carry.

Brownsville, Tenn. D. I. DUPREE.

ANSWER TO APRIL INQUIRY.

I see in your April number under the heading of "Correspondence" an article entitled "Information Wanted," where a brother practitioner says a plate draws too hard. I had trouble the same way, first with a vulcanite plate, later with an aluminum, which was some better but still too much suction After trying several things finally lined the plate with a piece of gauze, laid in loosely, which gave respectable satisfaction; the gauze is removed every day. Being simple, inexpensive and but a minute's work, is well worth trying.

Tacoma, Wash. H. D. BRAND.

SOCIETY

FOURTH INTERNATIONAL DENTAL CONGRESS.

At a meeting of the Committee of Organization of the Fourth International Dental Congress held in St. Louis, Mo., April 9, 1904, the following action was taken:

In accordance with the understanding at the last meeting of the committee, held at Washington, D. C., February 23, 1904, that a Nominating Committee for the purpose of nominating officers for the Fourth International Dental Congress be elected at the next meeting of the committee.

Dr. M. F. Finley made the following motion:

"That a Committee on Nominations be elected at this time for the purpose of proposing names for the officers of this Congress, and that Drs. A. H. Peck and W. E. Boardman, representing the Committee of the National Dental Association, and Drs. M. R. Windhorst and Wm. Conrad, representing the Committee of the Federation Dentaire Internationale, be constituted the Committeee on Nominations, to present nominations for the officers of the Fourth International Dental Congress, and that said nominations be presented at the present meeting of the Committee of Organization."

The motion was unanimously carried, and Drs. A. H. Peck, W. E. Boardman, M. R. Windhorst, and Wm. Conrad were elected as the members of the Nominating Committee.

At a subsequent session the Nominating Committee presented the following report:

"Your committee begs to report the following nominations for officers of the Fourth International Dental Congress:

"*President*—H. J. Burkhart, Batavia, N. Y.

"*Honorary Presidents*—James Truman, Philadelphia, Pa. A. H. Fuller, St. Louis, Mo. G. V. Black, Chicago, Ill. Thomas Fillebrown, Boston, Mass. S. G. Perry, New York, N. Y. Gordon White, Nashville, Tenn. E. T. Darby, Philadelphia, Pa. A. W. Harlan, Chicago, Ill. James McManus, Hartford, Conn. W. W. Walker, New York, N. Y. J. N. Crouse, Chicago, Ill. G. A. Bowman, St. Louis, Mo. H. A. Smith, Cincinnati, O. T. W. Brophy, Chicago, Ill. Wm. Jarvie, Brooklyn, N. Y. Wm. Conrad, St. Louis, Mo. M. R. Windhorst, St. Louis, Mo. S. H. Guilford, Philadelphia, Pa. J. D. Patterson, Kansas City, Mo. C. C. Chittenden, Madison, Wis. Wm. Carr, New York, N. Y. E. H. Smith,

Boston, Mass. M. H. Cryer, Philadelphia, Pa. E. A. Bogue, New York, N. Y. V. E. Turner, Raleigh, N. C. A. L. Northrop, New York, N. Y.

"Vice-Presidents—A. H. Thompson, Topeka, Kans. J. G. Reid, Chicago, Ill. George Fields, Detroit, Mich. D. O. M. LeCron, St. Louis, Mo. Garrett Newkirk, Los Angeles, Cal. R. Ottolengui, New York, N. Y. R. M. Sanger, East Orange, N. J. D. N. Rust, Washington, D. C. N. S. Hoff, Ann Arbor, Mich. L. P. Bethel, Columbus, O. Jules J. Sarrazin, New Orleans, La. C. L. Alexander, Charlotte, N. C. C. H. Darby, St. Joseph, Mo. B. C. Nash, New York, N. Y. G. S. Vann, Gadsden, Ala. B. F. Luckey, Patterson, N. J. E. R. Warner, Denver, Colo. Wms. Donnally, Washington, D. C. Frank Holland, Atlanta, Ga. C. A. Meeker, Newark, N. J. W. P. Dickinson, Minneapolis, Minn. E. K. Wedelstaedt, St. Paul, Minn. Adam Flickinger, St. Louis, Mo. V. H. Jackson, New York, N. Y. J. M. Whitney, Honolulu, Hawaii. B. Holly Smith, Baltimore, Md. Louis Ottofy, Manila, P. I. C. M. Gingrich, Baltimore, Md. H. B. Tileston, Louisville, Ky. Wm. Crenshaw, Atlanta, Ga. J. F. Dowsley, Boston, Mass. J. W. David, Corsicana, Texas. Geo. E. Hunt, Indianapolis, Ind.

"Secretary-General—Edward C. Kirk, Philadelphia, Pa.

"Treasurer—M. F. Finley, Washington, D. C.

"Committee to Nominate Honorary Presidents and Vice-Presidents for Foreign Countries—Edward C Kirk, Philadelphia, Pa. Edward H. Angle, St. Louis, Mo. Wilbur F. Litch, Philadelphia, Pa.

(Signed) "A. H. Peck,
"Waldo E. Boardman,
"Wm. Conrad,
"M. R. Windhorst.

"Committee on Nominations."

The above report was adopted by the Committee of Organization subject to ratification by the Congress in general session.

It should be understood that the foregoing list of nominations is necessarily incomplete and subject to future correction and amendment, depending upon individual acceptances and the addition of new names.

Edward C. Kirk, *Secretary*
Committee on Organization.

UNIVERSAL EXPOSITION—FOURTH INTERNATIONAL DENTAL CONGRESS AUGUST 29 TO SEPTEMBER 3, 1904, SAINT LOUIS.

Committee of Organization—H. J. Burkhart, Chairman, Lock Box 1615, Philadelphia; E. C. Kirk, Secretary.

Local Committee of Arrangements—William Conrad, Chairman, 457 Century Building Saint Louis; Sam T. Bassett, Secretary.

We, the Committee on Local Information, submit the following facts, important for the success of the Fourth International Dental Congress:

Every member of the profession who has at heart the welfare of dentistry should give it support, financially and by action.

We, as American members of the dental profession, would well keep in mind that the Congress will be held in our great country, and pride should prompt us to action to make the meeting one of great magnitude and far excelling its predecessors.

Let every dentist take hold with a will and push it to a successful issue.

This Congress should be of great interest to all of the profession. There is planned a monster clinic from the best clinicians of the world, scientific papers from the pens of the most noted and scholarly men of the profession and an exhibit to excel all others.

The meetings, the section meetings, the clinics and the exhibits will be held in the great Coliseum, where ample accommodations are secured.

Hotel Jefferson, the general headquarters of the Dental Congress, is one of the most fashionable and complete hotels in the West, if not in America, and is located on Twelfth street, one block from the Coliseum. Hotels of Saint Louis will be sufficient to meet all requirements.

The Information Bureau of the Exposition has a list of ninety-seven well-established hotels now doing business in Saint Louis, with a capacity of 41,000 guests, at prices ranging from fifty cents a day up on the European plan, and from one dollar a day up on the American plan. These established hotels have been supplemented during the year 1903 by thirty-five new permanent hotels now opening, or about to open, increasing the permanent hotel capacity to 67,000 guests, at prices ranging from one dollar a day up. The Exposition management holds the signed agreement of the leading hotels that "Rates shall not be increased during the World's Fair period." Prices are now lower in Saint Louis than in any other city for similar hotel accommodations and service.

The Exposition Information Bureau's list of 132 permanent hotels includes only the better class. There are now 173 hotels, large and small, in operation in the city, and the new hotel enterprises bing inaugurated justify the belief that the number will reach 250 before the opening day of the World's Fair.

Besides hotels with accommodations for more than 200,000 guests, the Exposition Information Bureau has a list of boarding-houses and rooming-houses of respectable character, on the street-car lines, with lodgings for 65,000 guests, and a list of private houses that will let rooms for 20,000 persons.

All over the city, apartment houses and rooming-houses are available for those who prefer rooms away from crowds, with meals at the restaurants.

There are 485 restaurants in Saint Louis that have a national reputation for good fare, good service, cleanliness and moderate prices. Twenty of these 485 restaurants can take care of 40,000 patrons.

The climate of Saint Louis is temperate in summer and most delightful in the spring and fall. It is the most central and accessible of

the four large cities of the United States, twenty-seven railways entering it, and passenger steamers on the Mississippi reaching it from north and south.

World's Fair cheap rates on railways and steamboats will be offered during the whole Exposition season, as follows:

RATES ADOPTED BY THE FOLLOWING ASSOCIATIONS.

New England Passenger Association, Trunk Line Association, Central Passenger Association, and the Southeastern Passenger Association.

Tickets will be on sale from April 15th.

Season tickets for eighty per cent of double one fare, good to return until December 15th.

For sixty days, one and one-third fares, not good to return after December 15th.

For ten days, one fare, plus $2.00, from points within two hundred and fifty (250) miles of Saint Louis.

For fifteen days, one fare, plus $2.00, from points over two hundred and fifty miles from Saint Louis.

Saint Louis is the fourth city of the United States in point of population, having 750,000 people. Certainly no city is more attractive with ininterest for the student of nature, science, history, etc. There are twenty-four public parks, containing over 2,100 acres, all well improved.

The World's Fair grounds lie five miles from the river, on the western edge of the city, and are reached quickly and comfortably by steam railway and fast trolley lines.

The visitors reach the city through the largest and most beautiful railway station in the world. Thirty-two tracks run into the station side by side, and the midway, or glass-roofed hall in front of the gates to the trains, will hold 30,000 people. Most of the hotels, except those temporary ones near the World's Fair grounds, are within ten minutes' ride of the station, in the heart of the business district. Street cars, reaches all of the hotels for one fare, pass the station, and the cab, carriage and baggage system is excellent.

The great Music Hall and Coliseum building that is secured for the meetings of the International Dental Congress is down-town, on Olive street, between Thirteenth and Fourteenth streets, within easy walking distance of Union Station, the hotels and the business district. It has a seating capacity for 8,000 people, with section rooms that will be arranged for the various committees and exhibitors.

Naturally every member attending the Fourth International Dental Congress will wish to see the World's Fair. This will be the most magnificent the world has ever seen, and it will probably be the last great exposition to be held in this country for many years, because of the enormous expenditure of labor and money attending it.

Congressman Bartholdt, in a recent speech made before Congress, said: "The Universal Exposition at Saint Louis is the apotheosis of centuries of civiliation. It is the culminating perfection of those wonderful international spectacles which have served to impress on our minds that it is good to be a living participant in the glories of this world.

"A decade of human achievement has elapsed since the Columbian pageantry of progress at Chicago. Every American who saw the 'White City' thrilled with the thought that the nations of the earth had assembled in the greatest Republic to do homage to the genius of enlightenment.

"Triumphs of the Emperors of Imperial Rome were but the mock pomp of childish fancies compared to the triumphs of peace as celebrated by such a labor of love at Saint Louis. On the May Day of this year the gates of welcome will be flung wide open and the vision of the century will then unfold its prophetic beauty for the uplifting of humanity.

"All in all, the Universal Exposition of 1904 wil be the sensational climax of the twentieth century, the grandest victory of peace and civilization, the greatest triumph human genius has yet achieved. To millions of its vistors it will be an academy of learning, an inspiration and an inexhaustible source of genuine delight, and the memories of the 'Ivory City' will live and bear fruit in ages yet to come."

We appeal to all reputable, legally qualified practitioners of dentistry to interest themselves in the success of this great international meeting.

Let every dentist in America put forth his greatest effort to advance the cause. Make application at once through your State chairman for a membership certificate. See that your fellow practitioner is enrolled, and then, and not till then, will you have done your full duty.

The membership fee to the Congress will be $10.00. It will entitle the holder to the official badge and all the rights and privileges of the Congress. He will also receive one copy of the transactions. Without a membership certificate it will be impossible to get into the general meetings, sections or clinics, or attend any of the various entertainments given during the Congress.

This great Congress presents to the American dentist an opportunity to see and hear the brightest and most learned men of the profession from all parts of the world, men of international reputation that shine as clinicians, and men of grea renown of the inventive turn of mind. This International meeting will be the Mecca of the profession of the world. We will all receive new light and be stimulated to a higher appreciation of our noble profession.

The local Committee of Arrangements and Reception, with its various minor committees, is working with increasing energy and will be ready to meet you and extend you a most hearty welcome.

Any further information can be obtained from the Committee.

D. O. M. LeCron, *Chairman,* Missouri Trust Building.
Max Fendler, *Secretary,* Missouri Trust Building,
George H. Gibson,
H. F. D' Oench,
G. L. Kitchen,
S. H. Voyles,
Orem H. Manhard,
Joseph G. Pfaff.

Permanent Local Committee and Bureau of Information.

THE MINNESOTA STATE BOARD OF DENTAL EXAMINERS

Will hold a special meeting for the purpose of examining applicants for license, June 13, 14 and 15, 1904.

No applications received after 12 m. June 13th. Meeting held at dental department of the State University at Minneapolis.

C. H. Robinson, *Secretary.*

Wabasha, Minn.

DROP IT FOR TWO DAYS.

Not this notice, but your practice, and meet with us in Lansing, June 28th and 29th. Our Program Committee have arranged something that will be instructive to us in our daily practice.

You can't afford to miss it.

Michigan Dental Association, June 28th and 29th, Lansing.

John J. Green, *Secretary.*

Ionla.

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The committee on railroad accommodations for the east have made arrangements for fast through Pullman service to St. Louis from New York, with the Lackawanna R. R. Two special Pullman cars will leave New York Tuesday, August 23rd, at 10 a. m. The cost of our excursion, including berth each way, will be $35.50.

A proportionate reduction is made for those going from Buffalo, Toledo, Fort Wayne and cities on the line of the connecting line, the Wabash R. R. To those desiring to go in these special cars, send notice to Charles A. Meeker, D. D. S., Secretary of the National Association or to Guy Adams, General Passenger and Ticket Agent of the Delaware & Lackawanna R. R. Accommodations have been secured for the National Association of Dental Examiners at the Franklin Hotel, northwest corner of Sarah and Westminster Place, with rates from $1.50 to $6.00 per day, European plan. Hotel first class.

Secure accommodations by writing to E. C. Dunnavant, St. Louis Service Co., 7th and Olive streets, St. Louis, Mo.

Chas. A. Meeker, D. D. S., *Secretary.*

THE GEORGIA STATE DENTAL SOCIETY.

The thirty-sixth annual meeting of the Georgia State Dental Society will be held in Athens, Ga., June 28, 29 and 30, 1904.

Arrangements are being made to make this the grandest convention ever held in Georgia. All ethical practitioners are cordially invited.

A. M. Jackson, *President.*

D. H. McNeill, *Corresponding Secretary.*

THE NORTHERN OHIO DENTAL ASSOCIATION.

I desire to call the attention of your readers to the fact that the meeting of the Northern Ohio Dental Society, Cleveland, Ohio, June 7th, 8th and 9th, for the study of "Painless Dentistry," is one which they can under no circumstances afford to miss.

Whether they are practicing in a small town or in the larger cities, they need the benefits to be derived from a first-class dental meeting. It is a post-graduate course on a small scale. Men who fail to attend good meetings, fail to do themselves, their patients, and the profession full justice.

To become a member of a good dental society and participate in its proceedings means to keep abreast with the times, and place them in a position to give their patients that to which they are entitled—dentistry with all its advancements.

No Dental Society has ever presented a program of greater interest from the standpoint of meeting the demands of the patrons of this profession than that offered by the N. O. D. A. this year.

While the study of pain-preventing methods is the leading theme for this year, yet the program is full of interesting features from a general standpoint. From the pain-preventing standpoint, every effort has been put forth to have every device and method in existence exhibited, demonstrated and discussed, that further this end.

The leading advocates and followers of the various painless methods will be present and participate in this meeting.

Doctor, whether a believer or unbeliever in "Painless Dentistry," you should attend this meeting.

If a believer, come and add your testimony in its behalf. If an unbeliever, then come and point out to us the error of our ways. In either case you will be welcome.

Doctor, if not a member of the N. O. D. A., come and join; you are eligible. If already a member, come and bring your neighbor. It costs but a small initiation fee. There are no annual dues. Once a member, always a member.

Come and bring your wife; our Cleveland ladies will see that she is entertained while we look after you.

If a stranger, introduce yourself to one of our Reception Committee and you will not want for acquaintance.

Come in the interest of self, patients and the profession. Come!

W. G. Ebersole, *Corresponding Secretary.*

DELTA SIGMA DELTA.

The twentieth annual meeting of the Supreme Chapter, Delta Sigma Delta fraternity, will be held Wednesday, August 31, 1904, at St. Louis, Mo. George E. Hunt, 131 E. Ohio street, Indianapolis, is chairman of the committee on arrangements.

NATIONAL ASSOCIATION OF DENTAL FACULTIES

The next annual meeting of the National Association of Dental Faculties will convene at 10 a. m. June 9, 1904, in Washington, D. C. The Executive Committee will be in session the afternoon of June 8th to consder such matters as may be brought before it. Arrangements are being made with the railroads for one and one-third fare on the certificate pln. The hotel as headquarters, together with the railroad rates, will be announced later by circular letters to the colleges.

Executive Committee,

H. B. TILESTON, *Chairman.*
S. W. FOSTER, *Secretary.*

NEW JERSEY STATE DENTAL SOCIETY MEETING.

The thirty-fourth annual session of the New Jersey State Dental Society will convene in the Auditorium, Asbury Park, N. J., 10 a. m., Wednesday, July 21st, and continue in session Thursday and Friday. Asbury Park is one of the great Atlantic Coast watering places, contiguous to New York and Philadelphia. The Auditorium will hold 3,000 people and is open on every side.

Fifty clinics will be given by men from North, South, East and West, most eminent in their profession, and will include the newest advances in all that pertains to operative and mechanical dentistry. In the exhibits the society feels that the latest and largest number of adjuncts to the successful practice of modern dentistry will repay a visit and inspection.

The essays will consist of five already accepted and the best obtainable.

The social to members and visiting friends will be as usual provided for, and on Thursday evening at 10:30 a smoker will be provided. The Columbia Hotel will be the headquarters with rates from $2.50 to $3.00 per day. Those desiring rooms must send in notice by July 1st. The program as usual will be replete with information.

CHARLES A. MEEKER, D. D. S., *Secretary,*
29 Fulton St., Newark, N. J.

VERMONT BOARD OF DENTAL EXAMINERS

The Vermont Board of Dental Examiners will meet at Montpelier on Tuesday, July 5, 1904, at 2 o'clock p. m., for the examination of candidates to practice dentistry.

Headquarters will be in the Pavilion Hotel.

Application blanks, together with rules and instructions to candidates, can be had on application to the Secretary.

Application with the fee, ten dollars, must be filed on or before June 27, 1904.

GEO. F. CHENEY, *Secretary,*
St. Johnsbury, Vt.

DENTAL COMMISSIONERS OF CONNECTICUT.

The Dental Commissioners of the State of Connecticut hereby give notice that they will meet at Hartford, on Thursday, Friday, and Saturday, July 14, 15, 16, 1904, respectively, to examine applicants for license to practice dentistry, and for the transaction of any other proper business.

The practical examination in operative and prosthetic dentistry will be held Thursday, July 14th, at 9 a. m., in Putnam Phalanx Armory, corner Haynes and Pearl Streets.

The written theoretic examination will be held Friday and Saturday, July 15th and 16th, at the Capitol.

All applicants should apply to the Recorder for proper blanks, and for the revised rules for conducting the examinations.

Application blanks must be carefully filled in and sworn to, and with fee, twenty-five dollars ($25.00), filed with the Recorder on or before July 7, 1904.

J. Tenney Barker, *Recorder.*

Wallingford, Conn.

COMMENCEMENTS.

Ohio Medical University, Dental College, April 28th—graduates, 57.
Kansas City Dental College, April 23rd—graduates, 23.
University of Omaha, Dental Department—graduates, 22.
Atlanta Dental College, April 28th—graduates, 59.
Western Dental College, May 1st—graduates, 52.
Western University of Pensylvania, Dental Department, May 1st—graduates, 39.
Barnes Dental College, May 3rd—graduates, 1.
Lincoln Dental College, May 2d—graduates, 7.
Indiana Dental College, April 29th—graduates, 78.
New Orleans College of Dentistry, May 5th—graduates, 15.
North Pacific Dental College—graduates, 19.
Pennsylvania College of Dental Surgery, May 1st—graduates, 89.
Louisville Dental College, May 4th—graduates 79.
Central College of Dentistry, Indianapolis, May 2d—graduates, 7.
Vanderbilt University, Dental Department—graduates, 36.
Chicago College of Dental Surgery, May 3d—graduates, 145.
Marion-Sims Dental College, April 26th—graduates, 39.
University of Illinois, Dental College—graduates, 60.
University of Maryland, Dental Department—graduates, 64.

CANADIAN DENTAL ASSOCIATION.

The next meeting of this association will be held in Toronto, September 6, 7, 8, 1904.

W. Cecil Trotter, *Secretary.*

AFTERMATH

PERSONAL AND MISCELLANY.

Retires from Practice.—Dr. T. S. Hitchcock, veteran dentist of Oswego, N. Y., retired from practice May 1st.

Gone to New York.—Dr. A. W. Harlan, formerly of Chicago, is now located at 1122 Broadway, New York City.

Narrow Escape.—Dr. J. M. McDowell, Chester, Pa., nearly bled to death from nose bleed, April 26th.

Injured.—Doctor Monkman, Vermontville, Mich., was seriously injured in a runaway at Nashville, April 29th.

Gone to Boise, Idaho.—Dr. E. F. Burm of Wells, Minn., has located at Boise, Idaho.

Found Dead.—Dr. S. G. Wood, dentist, Philadelphia, was found dead in his room, April 21st. Believed that death was due to natural causes.

Robbed.—Denta' office of Drs. W. H. & E. H. Stephens, Danville, Ill., was robbed April 29th; loss small. Dr. Gray, Columbus, O., May 8th; loss $30.00.

Died.—The wife of Dr. J. D. Patterson, Kansas City, Mo., died March 24th. We extended our heartfelt sympathy to Brother Patterson in his affliction

Guilty of Practicing Without a License.—C. H. Sexton, Seattle, Wash., was found guilty of practicing dentistry without a license and fined, April 17th.

Whew! Think of the Slaughter.—Dr. Anson A. Stone, of Dunkirk, has practiced dentistry for 41 years. His record is 58,000 teeth extracted and 5,800 plates made.

Jackson, Michigan, Dental Society.—Newly elected officers are: President, Dr. W. H. Morse; vice-president, Dr. F. E. Robinson; secretary and treasurer, Dr. Geo. Baylis.

Dentist Wanted in Liege.—There is a good opening there for an American dentist equipped with the latest devices and possessing the necessary ability to perform good work.

Columbus (O.) Dental Society.—Officers elected for ensuing year: President, E. C. Sherman; vice-president, F. M. Casto; secretary, Doctor Longnecker; treasurer, F. R. Chapman.

School of Orthodontia.—Dr. E. H. Angle, St. Louis, will give a six weeks' course in Orthodontia, to a limited number of teachers and worthy practitioners, beginning September 12th.

Central Michigan Association.—Officers chosen: President, Dr. C. E. Whitmore, Portland; vice-president, Dr. J. A. Yon, Grand Ledge; secretary and treasurer, Dr. S. A. Horning, Portland.

A New Dental Board Appointment.—Governor Yates, of Illinois, has appointed Dr. C. P. Pruyn, Chicago, a member of the State Dental Examining Board to succeed Dr. D. M. Gallie, resigned.

Erratum.—In May number of The Summary, page 432, under heading "A Deserved Honor," the name should read Dr. James Truman instead of Dr. James Freeman, as printers made it appear.

Of Course, They Always Are.—The dentists in session at the state convention in the Pantlind are about the finest looking body of men who have assembled in the city in years.—Grand Rapids (Mich.) Post.

Dental Examining Board Appointments.—Dr. D. M. Clapp, Boston, and Dr. G. A. Maxfield, Holyoke, Mass., have been renominated as members of Registration in Dentistry for the State of Massachusetts.

Retires from Practice.—Dr. A. S. Cutler, Kankakee, Illinois, who has been in the active practice of his profession 36 years, all of that time in the same building, has sold his practice and location and will travel for a while.

Appointment of Dentist to King of Roumania.—Dr. Frank I. Shaw, a young dentist of Seattle, has been offered the appointment of dentist to King Charles of Roumania. He has not yet decided to accept the position.

Southern Minnesota Dental Association.—Officers elected are: President, Dr. A. C. Rosenquist of St. Peter; vice-president, Dr. W. W. Wold of Jackson, secretary, Dr. W. A. Demo of Blue Earth City, and treasurer, Dr M. B. Wood of Mankato.

Idaho State Dental Society will meet at Boise, June 15th, 16th. Officers elected as follows: President, Dr. J. B. Burns of Payette; vice-president, Dr. J. W. Stalker of Caldwell; secretary, Dr. A. W. Cate of Boise; treasurer, Dr. J. W Easter of Weiser.

Woman Dentist Bankrupt.—Charlotte E. Benton, a dentist, of No. 246 West One Hundred and Twenty-eighth street, has filed a petition in bankruptcy in person. Her liabilities are $5,600, and nominal assets consisting of $100 cash and debts due her $60,000.

Champaign County, Illinois, Dental Society. A newly organized dental society with officers as follows: Dr. F. O. Sale, Urbana, Ill.,

president; Dr. H. E. Davis, St. Joseph, Ill., vice-president; Dr. J. Addison Brown, Champaign, secretary; Dr. W. H. Boon, Champaign, treasurer.

Mississippi State Dental Society.—Officers elected: L. B. Nesbit, of Aberdeen, president; W. H. Reaben of McComb City, first vice-president; E. N. Bingham of Pontotoc, secretary; L. G. Molauin, of Fayette, corresponding secretary; C. C. Crowder of Kosciusko, treasurer.

Fined for Illegal Practice.—Drs. C. E. Marsh and A. M. Abrams of the New York Dental Co., at Boise, Idaho, have been convicted of practicing without a State license, fined $5,000 and costs each. New complaints have been sworn to by members of State Examining Board.

Died in Dental Chair.—Mrs. Esther Unselt died in a dental chair at Akron, O., April 14th, from the effects of tooth extraction under chloroform. The Coroner exonerated the dentist and physician as the heart had been examined and found normal before the anesthetic was administered.

Narrow Escape.—Dr. T. A. Rose, a prominent dentist of Sioux City, Ia., had a narrow escape from a violent death, recently in a runaway, in which he was dragged for 200 yards along a rough and untraveled road. He was almost unconscious when found, but is recovering from his painful bruises.

Fire From Explosion of Gasoline Furnace.—Owing to the explosion of a small gasoline furnace which was used in the dental office of Dr. J. B. Askew, Jr., Vicksburg, Miss, a serious fire occurred, whereby the office and waiting room, with all its fixtures, was completely wrecked. Loss $5,000; covered by insurance.

Purchased Doctor Taft's Library.—The University of Michigan has purchased the Dental Library of the late Dr. Jonathan Taft, for many years dean of the department of dentistry of the university. The library will be added to the collection of dental books now at the disposal of the faculty and students of the department.

Badly Burned by Explosion.—Dr. George W. Harris, a dentist of Fergus Falls, Minnesota, was frightfully burned by an explosion of gasoline in his office April 10th. He was working in the laboratory when a spark from an electric motor exploded the gasoline. The skin was burned off his face, hands and arms, but his eyes escaped injury.

Married.—Dr. T. H. Rath, Davenport, Ia., and Miss Grace Peck, Chicago, were married April 12th. Dr. S. S. Shattuck, Andover, Mass., and Miss Lillian S. Barry, Andover, married March 31st. Dr. G. W. Bourne, and Miss Julia Syrer, both of Newark, O., married April 19th. Dr. H. W. Lummis, Cape May City, N. J., to Miss Carrie V. Powell, May 2d.

Chicago Dental Society.—Officers for ensuing year are: President, Thomas L. Gilmer; first vice-president, C. N. Thompson; second vice-president, F. V. Yorker; recording secretary, Winthrop Girling; corresponding secretary, A. E. Morey; treasurer, C. P. Pruyn; librarian, J. H. Woolley; member board of directors, J. G. Reid; board of censors, C N. Johnson, chairman; W. V-B. Ames, A. W. Harlan.

Fourth District Society.—The Fourth District Dental Society of the State of New York, at its thirty-sixth annual meeting at Saratoga elected the following officers: President, W. S. Rose of Schenectady; vice-president, A. T. Hawley of Waterford; secretary, E. B. Rhinehart of Schenectady; treasurer, E. Doolittle of Saratoga; correspondent, J. Barraclough of Sandy Hill The next annual meeting will be held at Schenectady.

Black Teeth.—Emigrants from Southern Italy are, many of them, disfigured by what is known as "black teeth." The teeth of these persons are affected during the period of growth by some gaseous constituent of drinking water, probably from inpregnation with volcanic vapors. The defect gives a sinister look to an otherwise handsome face, but fortunately does not, it seems, affect the strength or durability of the teeth.

Utah Dental Association.—President, W. G. Dalrymple, Ogden; first vice-president, F. G. Stiehl, Salt Lake; second vice-president and master of clinics, J. W. Boisol, Salt Lake; secretary and treasurer, S. W. Wheery, Ogden. Dr. Enoch Van Cott of Salt Lake was appointed chairman of the executive committee, and Dr. A. Scott Chapman, chairman of the membership committee. Provo was selected as the place for the next convention.

Connecticut Dental Society.—The newly elected officers are: President, David W. Johnson, New Haven; vice-president, E. B. Griffith, Bridgeport; secretary, Frederick Hindsley, Bridgeport; assistant secretary, C. C. Prentiss, Hartford; treasurer, W. O. Beecher, Waterbury; executive committee, E. S. Gaylord, New Haven; S. S. Rosenbluth, Bridgeport; H. A. Spang, New Haven; librarian, H. R. Keeler, New London; editor, Albert H. Spicer, Paucatuck.

Deaths.—Dr. T. M. Roudebush, 57, Covington, Ky., April 26th, after a brief attack of grip. Dr. J. M. Lionberger, age 70 years, Dallas City, Ill., April 9th; cause pneumonia. Dr. J. E. Baird, Joliet, Ill., April 5th. Dr. Chas. Kahn, Milwaukee, Wis., April 11th, age 83 years. H. C. Gill, Rock Island, Ill., fell dead in his office, April 5th; heart trouble the cause. Dr. J. F. DePlantue, Thompkinsville, L. I., April 2d; age 94 years. Dr. W. C. Ball, Gibson City, Ill., died April 30th of tuberculosis of the lungs; age 34 years.

Throws a Steer with His Teeth.—A Texarkana, Ark., paper states that a feature of the roping contest at Texarkana Spring Park was the performance of "Bulldog Nigger" Picket who threw a steer with his teeth. Picket is a black Hercules. The steer, a fierce animal, was

turned loose and came tearing down the track, with the negro in pursuit on horseback. When he overtook the steer Picket leaped on its back and, straining the gigantic muscles of his arms and back, threw the steer on its side by wrenching its horns. The steer quickly regained its feet. Picket seized it by the horns again and, gripping the steer's nostrils between his teeth, twisted its head and threw it without using his hands.

Chinese Fossil Teeth.—Dr. Max Schlosser has made a singular collection of fossil teeth from drug stores in various parts of China, where they are sold under the name of dragons' teeth, and are valued for their supposed curative powers. Upon examining them Doctor Schlosser found that they are the remains of many species of extinct animals, such as the ancestral forms of camels, saber-toothed tigers, three-toed horses and other creatures of ancient times, some of which, like the ancestral forms of camels and antelopes, were supposed to have had their original home in America and in Africa. Judging from the quantities of these teeth sold, Doctor Schlosser thinks they must exist in enormous numbers in some parts of the Chinese Empire.

How He Works the Dentists.—It is believed that the sneak thief who visited the dental office of Doctor Medler, Duluth, Minn., and stole a purse containing $14 is playing a systematic game of thievery. The same man is supposed to have visited the office of Doctor Bugbee a short time ago. He introduced himself to the Doctor as a traveling salesman for the steel corporation, and said he wanted a tooth treated and was looking for a dentist by the name of Hallock, who had been recommended to him. A search of the dental records failed to disclose any such name and the traveling salesman said he would return later and let Doctor Bugbee do the work. The tooth showed a cavity and Doctor Bugbee believes the man removes the filling at will when he visits dental offices. Then, under the pretense that he intends, at some later date, to have the tooth filled, he gains time and avails himself of the opportunity to grab any valuables in sight. He is described as well dressed, of medium height, light brown moustache curled up at the ends and a face inclined to be thin.

A Painless Patient is a Pleased Patient.—There's not much comfort in a name. Your patient doesn't care whether it's a cavity, an exposed nerve, or an ulcerated tooth. If there's pain, that's enough for the patient. If it's toothache, faceache, or headache, no matter! It is nerveache—there's pain. Relieve it! Pain is often all there is to it. Stop the pain and you please the patient. Morphine? If you like! But why create "a habit," check digestion, retard absorption, diminish renal secretion, constipate, and reduce the flow of bile? Antikamnia & Codeine Tablets stop pain, reduce fever. That's the whole story. No disturbance of stomach, bowels, kidneys, liver or heart. Dentists when operating should administer one Antikamnia & Codeine Tablet every hour, giving one shortly before begining the operation. One Antikamnia & Codeine Tablet before and one after

extracting a tooth, will prevent the severe pain and consequent nervousness. Toothache, facial neuralgia, and earache can be greatly relieved with one Antikamnia & Codeine Tablet every hour or two.

Hearing and Voice Restored by Extraction of a Tooth.—The joy of losing an aching wisdom tooth and regaining the hearing of her right ear in one operation has come to Miss Louisa Fischer of 1674 Madison avenue, states a New York paper. Instead of sailing for Bremen to consult eminent aural specialists about her deafness, she will take a train for St. Louis to be at the opening of the Fair and celebrate her deliverance.

Miss Fischer is a musician. She lost the hearing of her right ear a year ago and suffered intensely from pains in the drum. She could neither play nor sing, and her life was made miserable. She went to aural specialists, but all of them shook their heads and gave her no hope. They advised that she go to Bremen. So distressed was she that she decided to undertake the long passage on the Belgravia. Trunks were packed and everything was in readiness.

As a last thought she dropped in on a dentist only two doors away to have him attend to her teeth. She told him about the troublesome wisdom tooth that jumped and jerked at all hours of the day and night.

"Pull it," he said She consented and out it came.

"Why, the pain in my ear is gone!" cried the astonished girl as she got up from the dentist's chair.

She went home to finish preparations for her departure. The noises in the street were no longer muffled, her own voice was clear and distinct again. She sat down to the piano and once more felt the joy of listening to harmonized notes that came clear and strong.

She was no longer deaf. The girl ran back to the dentist when she at length realized what had happened. Dancing for joy, Miss Fischer decided on the spot to give up her trip to Europe.

"I will celebrate my deliverance by going to St. Louis and hearing the band play," she decided. (The dentist probably received fifty cents and a few thanks for the marvelous cure.—Ed.)

Patents Recently Granted of Interest to Dentists.—

756138—Tooth-brush attachment, Arnold A. Petersen, Muscatine, Iowa.

755670—Dental Impression-tray, Christos Joannidi, Constantinople, Turkey.

756336—Dental handpiece, Lyter H. Crawford, Dallas, Texas.

756506—Dental tooth-crown, Wm. N. Kidder, Providence, R. I.

756250—Washbowl or spittoon, Lester F. Lerchner, Charlottenbury, Germany.

757133—Holder for dental bite-takers, Edmund B. Marshall, Rome, Ga.

36878—Design, Dental-tool handle, Carl H. Seeger, Manitowoc, Wis.

Copies of above patents may be obtained for ten cents each by

addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

Appreciate The Dental Summary.—"The Dental Summary is the best that ever happened. I prefer it to all others."—Dr. F. G. Stover, Jonesboro, Ark.

"Enclosed find $1.00 for Dental Summary subscription. I prefer it to all other dental journals and could not be without it."—Dr. N. N. Wycoff, Trinidad, Col.

"The Dental Summary is my favorite."—Dr. S. C. Durham, Reed City, Mich.

"Enclose $1.00 for Dental Summary. The February number failed to reach me so please send me a duplicate copy as I do not want to miss a single number."—Dr. Eli Jennings, Jabez, Ky.

"Enclosed find check for The Dental Summary, 1904. I consider it one of the very best dental journals published and wouldn't do without it."

"The Dental Summary is a splendid journal; there is none better." —Dr. F. R. Terrell, New Vienna, Ohio.

"Enclosed find money order for $1.00 in payment for The Dental Summary. I wish to say in behalf of The Dental Summary that you have my best wishes and all that is necessary for a continuation of the standard you have raised for a modern up-to-date dental journal. I consider The Dental Summary the best dental journal published." —Dr. B. G. Croxford, Newport, Maine.

"My subscription for The Dental Summary is to be perpetual. It's a fine magazine."—Dr. F. J. Haessler, Brookville, Ohio.

"The more I read The Dental Summary the more I like it. I can't do without it."—Dr. R. H. Kent, Burlington, Kan.

The above are but a few of the many letters of commendation we are constantly receiving. If you are not a subscriber to The Dental Summary you are missing something of great value.

REGULAR CONTRIBUTIONS

MAKING PORCELAIN INLAYS BY THE IMPRESSION AND MATRIX SYSTEM.*

BY R. M. CHASE, M. D., D. D. S., BETHEL, VERMONT.

Making porcelain inlays by the impression and matrix system, is the result of a method I devised several years ago for making gold fillings out of the mouth in a matrix or mould,

FIG. 1

FIG. 2

Porcelain Inlays made by the Chase Method

either by packing gold directly into the matrix and melting away the metal, or by burnishing platinum foil into the matrix and melting scrap gold into the foil thus forming a gold filling, and cementing the same into the tooth cavity.

*Paper and Clinic given before the Connecticut State Dental Association, April 20, 1904.

As this method or system was published in several dental journals in 1900, I need not go into the details of gold inlay

FIG. 3

FIG. 4

Porcelain Inlays made by the Chase Method

FIG. 5

Chase's Fusible Metal Matrix of Labial Cavity of Fig. 4

work. Suffice it to say that the materials I used seven or eight years ago were crude and imperfect. The principle, however,

was correct and gave me an incentive to work out and overcome the difficulties incident to an undeveloped system. Porcelain as a filling material should be and is being utilized more and more every year, but only the expert operators have been able to produce this class of work satisfactorily. There is no reason why the average practitioner should not become proficient in this line of work *provided* a system is taught that will produce positive and artistic results.

It is needless for me to go into the details of cavity preparation for porcelain inlays. This part of the operation has been

FIG. 6
Gold Crown with front cut out, forming a Cavity

so thoroughly explained in our dental journals, in the past few years, that I assume you are all familiar with this important step.

Starting, then, with a properly shaped cavity, we proceed to secure a reproduction, or impression of the same. Dividing the cavities into two general classes, the first, that of the labial, buccal and crown variety, are to be taken with a special impression compound which, after much experimenting and repeated changing of formulas, I have found best adapted to the purpose. I might add that to perfect this compound as it is now furnished

requires the most painstaking and thorough compounding of the ingredients, taking many days to prepare and temper even a small amount suitable for impression work. This compound copies and retains perfectly the most delicate lines and shape of the tooth cavity, so essential to the perfect results of this system. As this compound absorbs water readily, it should not be allowed to come in contact with moisture unnecessarily.

The second class is all the cavities found in the approximal surfaces and should be taken with my special cement, prepared

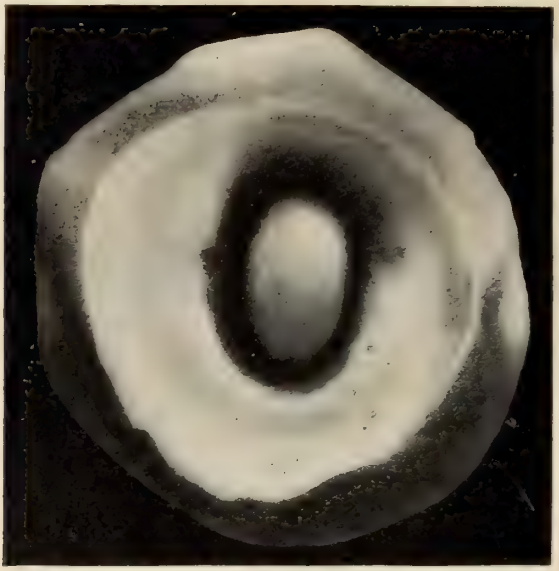

FIG. 7
Impression of Cavity shown in Fig. 6

especially for approximal cavities This cement differs from all other cements, as the mix is made with water which is readily evaporated leaving a perfect reproduction of the cavity, and upon the reproduction, after drying, may be poured molten matrix metal without changing its form. This in itself is quite an advance step, as this class of cavities was extremely difficult and often impossible to reproduce with my regular impression compound or with any other material.

For cavities of the first class, take a piece of the compound half the size of an English walnut (Fig 16), working and kneading it with the fingers, tempering it so that it will be a little

stiff. If too soft, either roll in a napkin to absorb the excess of glycerine, or work into the compound a little powdered pumice.

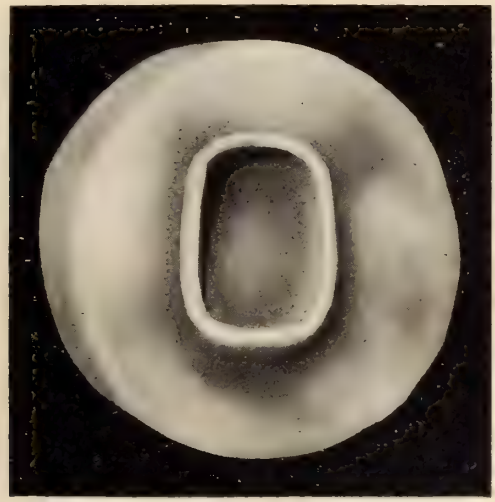

FIG. 8
Fusible Metal Matrix from Impression Fig. 7

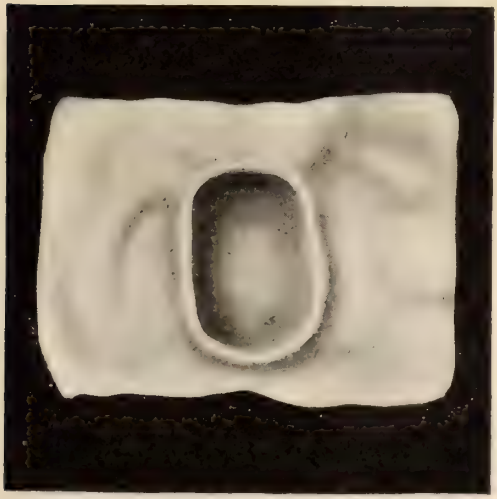

FIG. 9
Platinum Foil Matrix (one thousand thick) made by burnishing into Fusible Metal Matrix Fig. 8

If too hard, work into the mass a drop or two of glycerine. One or two trials will enable one to temper it just right. Place the

compound in a crown impression-cup and work the center of the mass up to a point or convex surface, dip the finger into the

FIG. 10
Finished Porcelain Inlay baked in Foil Matrix ready to be cemented into Crown Fig. 6

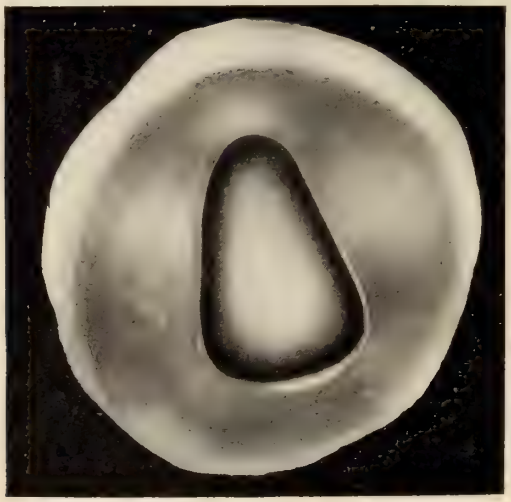

FIG. 11
Impression of Cavity in Lateral Gold Crown Fig. 13

talcum compound and rub the surface until it presents a shiny appearance.

With the cavity, tooth and gum perfectly dry, place that convex point in the cavity and with a firm and steady hand press

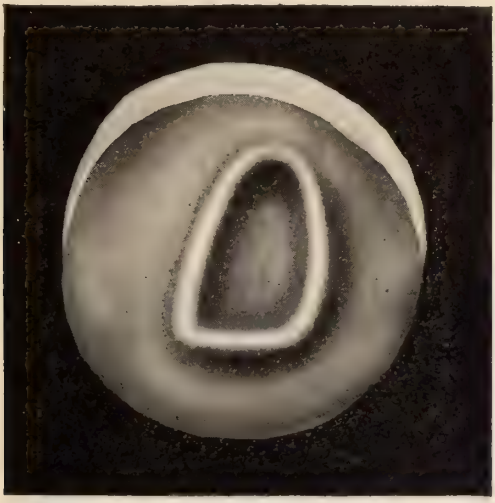

FIG. 12
Fusible Metal Matrix of Impression Fig. 11

FIG. 13
Gold Crown with Inlay inserted, made by the Chase Method

the compound into place. This will give a perfect impression of the cavity as well as the surrounding parts, the latter giving

ample surface to enable the adjustment of a band of very thin metal without disturbing the cavity impression. The band should be as large as the surface of the impression will allow. Carefully adjust the metal ring or band into the compound around the cavity impression. (Fig. 17). See that the edge of the band sinks into the compound to prevent the molten metal from escaping underneath.

To produce a metal suitable for making matrices or cavity reproductions has been one of the most difficult problems in connection with this system, for indeed it must possess certain char-

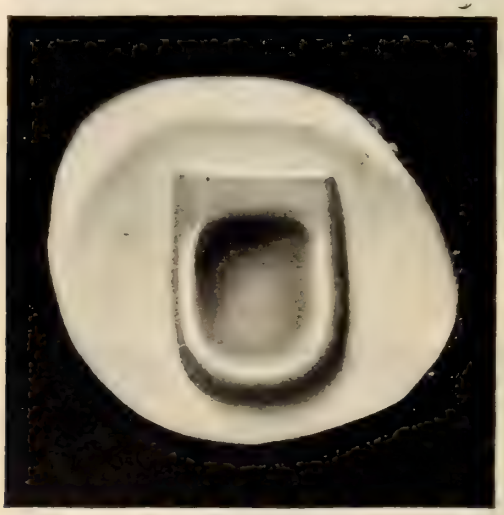

FIG. 14
Metal Matrix of Cavity made from Impression of Labial Cavity in Bicuspid Gold Crown Fig. 15

acteristics not found in the ordinary fusible metals which have been heretofore produced. A metal suitable for this work must be readily fusible, yet exceedingly hard to withstand considerable pressure without change of shape while fitting the foil matrix. It must cast sharp to reproduce perfectly the angles and edges of the cavity, it must neither shrink nor expand.

Heat two or three bars of the matrix metal (Fig. 19) in a spoon or ladle to a degree that will just char or brown white paper. When this is accomplished, pour into the band onto the impression. As soon as the metal is cool, separate and a perfect facsimile of the cavity will result.

The second class, or approximal cavities, requires a different impression material. Having secured ample space, which should be wider than the depth of the cavity, with dam adjusted, mix a little of the special cement with a drop or two of water to the consistency of thick cream, fill the cavity, permitting the cement to overlap the edge of the cavity; in a few minutes the cement will be hard. The cavity having been previously wiped with vaseline or oil, it can be easily removed and should be placed upon a flat piece of compound with the convex surface upper-

FIG. 15
Gold Crown with Inlay Front, made by the Chase Method

most. (Fig. 18). Around this, place a metal band and after heating the filling to expel any moisture, pour the metal into the band.

The cement enables the operator to get an impression of difficult cavities which would be impossible to produce with the impression compound. The cement impression should be thoroughly dried out to prevent any escape of steam which would spoil the matrix, either by holding over a flame or by setting aside until all the water has evaporated. Do not be in haste to remove the cement in pression from the cavity, as the longer it remains in the cavity the harder will be the impression and the less

liability to fracture when removed. It takes about fifteen or twenty minutes for the cement to harden in the cavity.

Having secured an impression and matrix the balance of the operation is simple and easy. Cut a piece of 1-1000 or 1-2000 platinum foil of sufficient size to enable its being held steadily upon the matrix with the left thumb and index finger during the shaping which may be done in the usual way, by the use of spunk, burnishers, etc., or in a better way, by the use of my matrix-forming device which makes the shaping of a foil matrix an easy and accurate proceeding and one which requires but very little time. (Fig. 9). The device is of the general shape of a cross-action forcep or plier with special beaks for the special

FIG. 16
Chase's Special Impression Compound

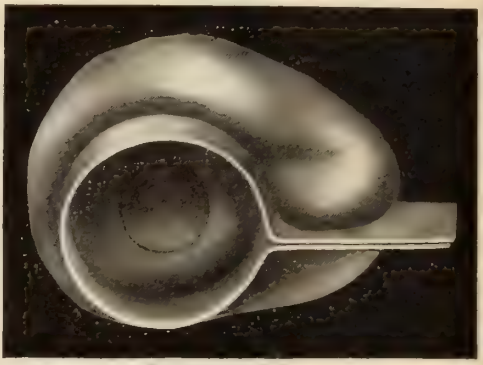

FIG. 17
Impression taken with the Compound with band adjusted

purposes. (Fig. 20). Removably attached to one beak is a conical-shaped soft rubber point (Fig. 21), which, when forcing a matrix to the floor and walls of a cavity, exerts its pressure upon the center first and swages from the center to the surrounding walls with a steady evenly distributed pressure which minimizes the danger of the wrinkling of the matrix.

The foundation of a good inlay is a good impression of the cavity in the form of a matrix. (Fig. 15). Many failures are due to a poor matrix. It will readily be seen that with my matrix-former it is practically impossible to get a poor matrix owing to the even distribution of the force applied to the foil and the stretching and swaging of the metal from the center.

With my device, matrices are so easily, quickly and accur-

ately made that in my practice I generally make several so I can bake several inlays of slightly varying colors at the same time.

The opposing beak of the matrix-former can be used without a covering when forcing the matrix into a metal impression or can be covered with a protecting rubber shoe (Fig. 22) for use when the beak is to be placed against a natural tooth.

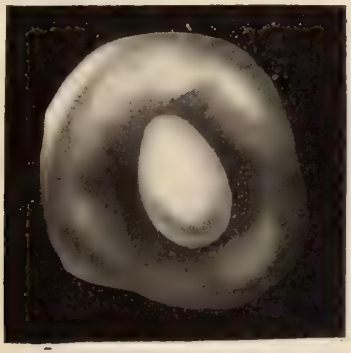

FIG. 18
Impression of Approximal Cavity made with Chase's Special Impression Cement

This in brief covers the general idea of my matrix system. While it seems easy and simple, I would suggest to those not familiar with the technic of inlay construction, the importance of first becoming familiar by experimental work with this system, thus gaining a fair degree of skill before attempting actual operation in the mouth. I am often asked if any fusible metal, clay

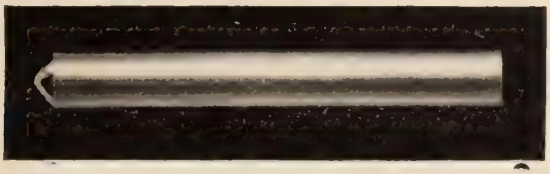

FIG. 19
Bar of Chase's Fusible Metal designed especially for reproducing Cavities for Inlay Work

compound like moldine or cement can be used. Answering this I can only say that if years of work and experimenting to develop and perfect this system has not produced perfected materials by which this system can be used with a positive degree of certainty, I would not now be standing before you, gentlemen, advocating the impression and matrix system I have received so many

letters of inquiry in regard to this system and where the materials can be obtained to successfully use the system, that I have made arrangements with The Ransom & Randolph Company to supply a complete outfit for doing this work, and also the matrix-forming device. (Fig 20). I still retain personal

FIG. 20
Matrix Former

supervision over the manufacturing of the materials, for upon the proper mixing and tempering of these materials is based the future success of this system. With this method of making matrices and a familiarity with porcelain bodies I bespeak for you the most satisfactory and artistic results.

FIG. 21
Rubber Point

FIG. 22
Rubber Shoe

Porcelain inlays in shell crowns, made by this system, have proven so satisfactory to the writer that it seems fitting to call attention to them at this time. By referring to Figs. 6, 7, 8, 9, 10, 11, 12, 13, 14 and 15, the reader will at once become familiar with the construction of these crown inlays without further explanation, and I am sure that the results of this practice will be satisfactory to all.

THE CONTACT POINT.*

BY W. A. SIDDALL, D. D. S., CLEVELAND, OHIO.

The contact point is a rather small point but a very vital one, and has a great deal to do with the salvation of the teeth and the comfort of the patient.

In spite of the great volume of literature written on the subject of contour of the teeth, it does not seem that sufficient importance has been placed upon the matter of getting and keeping the contact point.

What I have to say is not so much the result of theoretical study along this line as an expression of my appreciation of the importance of the subject and a few conclusions reached after a rather close observation extending over several years.

I do not care to take the time to preface this discussion by a history of the various methods of practice which have led up to the final adoption of the contour system of filling which has now for many years been recognized as the correct method of operating.

We are gradually finding out that the nearer we can follow the original plans of the Creator in all our operations, the better will be the results, and any method of practice greatly at variance with these plans is not a correct method for us to follow. For reasons not quite clear to me the importance of this method does not yet seem to be fully recognized and the method is not practiced as generally as it should be.

We hear a great deal in these days about extension for prevention, but extension for prevention avails little unless the teeth have been sufficiently separated so that the fillings may be finished and the teeth allowed to come back together with a normal contact point. Fillings may be extended buccally and lingually and cavity margins extended cervically, but unless that contact point is maintained decay will set in and ruin those beautiful fillings, no matter how carefully made.

It is wise not only from the standpoint of making enduring work, but for the sake of the comfort of the patient, that sufficient space should be gained before placing proximal fillings.

This matter of contact so essential in fillings is equally so in crown work and bridges. So often we see gold and porcelain

*Read before the Cleveland Dental Society.

crowns placed, which ought to be a delight to the patient in every way, a source of continual annoyance because this important matter had been neglected.

In the normal adult mouth with all the teeth in place it is little short of malpractice to fill proximal cavities, especially in bicuspids and molars, so that the contact point is lost.

The age of the patient and the condition of the teeth are important factors in the consideration of this subject, and right here is where a great deal of judgment is required. The only exception that I would make to absolute contact in normal conditions is in the case of a mouth where all the teeth are in place except the third molars which are just erupting. In such an absolute contact is the better plan, but from a practical standpoint no harm would result from a *very near* approach to contact for the crowding together of the teeth, resulting from the erupting third molar would soon restore perfect contact.

Such an operation in the mouth of one well along in years would result disastrously, for the slight space thus left having no counteracting influence would be gradually increased by the action of food crowding in between the teeth and the patient would have one of those distressing "meat holes." Eventually a recurrence of decay would surely take place and a loss of gum tissue in the interproximal space.

We do not always, in fact rarely, have a normal mouth as far as occlusion and arrangement of the teeth is concerned, in which to work, and here is where the perplexing part of it comes in. What to do in those abnormal conditions resulting from the extraction of teeth is not always a matter of easy solution. However, where it is possible to restore a lost contact point it should be done. Often it is wise to make an exaggerated contour filling or crown to accomplish this and in many such cases nothing that you can do will result in so much satisfaction to the patient.

Perhaps a short study in the means of gaining space in which to operate would be in order. In many cases in the anterior teeth sufficient room may be gained with a mechanical separator so that the fillings may be made and properly finished. This means is also efficient in many posterior cavities, yet the difficulties of holding and working around a mechanical separator in the back part of the mouth are such that in most instances a better way is to gain the space by previous separation. This may be ac-

complished in one of two general ways, depending on the condition of the teeth and the time at the disposal of the patient and operator.

First, by a reasonably quick separation by means of tape, cotton, cotton and sandarac and occasionally rubber.

The other way is the one first suggested, I believe, by the late Doctor Bonwill, and is accomplished by packing cavities with base-plate gutta-percha. A very considerable space could be gained in this way where there are occluding teeth without discomfort to the patient in three of four weeks. It is often desirable to let the gutta-percha remain for some months, and this can be done.

And right here I want to enter a protest against filling such cavities temporarily without cement; only in rare cases is this justifiable. More comfortable, serviceable and oftentimes, more durable temporary fillings can be made with hard gutta-percha without jeopardizing the interproximal space and when the time comes for permanent work you have gained the space necessary for restoring the normal contact point.

In making crowns, sufficient attention should be given when making the band so that when the crown is finished and placed in position on the root, the contact points are properly restored.

If the finished crown is found to be deficient in this respect, the difficulty can easily be remedied by melting a sufficient amount of solder on the proximal surface of the crown at the proper point.

In porcelain crown-work the same thing may be accomplished by fusing onto the crown a little of the porcelain body.

THE STEP CAVITY.*

BY L. L. SHEFFIELD, D. D. S., TOLEDO, O.

The step cavity is a cavity made in a tooth for the retention of large fillings where the ravages of decay have extended far enough to make necessary a contour filling. This form of cavity is especially adapted in any of the six superior anterior teeth either mesio-incisial or disto-incisial, or the combination of the two. To form a cavity in the mesial surface of a superior central in-

*Read before the Toledo Dental Society.

cisor, break and cut away all the unsupported enamel as far as the mesio-labial groove and extend this cavity as far on the lingual surface as on the labial making the axial wall of the cavity parallel with the long axis of the tooth; extend the cavity toward the gingival until the mesio-gingival wall is below the interproximal gingivae, making the gingival wall flat from labial to lingual, also from the mesial to the axial wall. At the union of the labial and the gingival and lingual and gingival enamel walls, the margins should be made in an evenly rounded curve to be pleasing to the eye.

For retention of the fillings there should be a groove made with an inverted cone in the dentine of the gingival walls, between the axial wall and the mesio-gingival enamel, extending from the labio-gingival toward the lingual and gradually growing less in depth until half the distance is reached from labial to lingual, where the groove should come to the surface of the gingival wall. The groove should be made in the same manner, beginning at the lingo-gingival and extending toward the labial, decreasing in depth until the surface of the gingival wall is reached at about the center of the tooth, linguo-labially.

The labial and the lingual wall may be slightly grooved from the base of the groove in the gingival wall toward the incisal edge.

At the incisive edge, grind away a small portion of the enamel about the thickness of an eighteenth gauge piece of gold, extending from the incisive edge toward the gingival, and extending toward the distal past the disto-labial groove. On the lingual, extend this grinding about twice as far toward the gingival as on the libial surface; then with an inverted cone, or fissure bur, make a groove in the dentine between the labial and lingual walls of enamel, extending from the axial wall toward the distal and same distance that the enamel was ground in that direction; this groove should be shallow, only about as deep as the length of an inverted cone.

At the distal end of this groove, cut the enamel away toward the lingual just the width of an inverted cone used in making the groove; then at the distal end of this groove between the enamel walls, in the dentine, make the groove just a little deeper, to the extent of about one half the length of an inverted cone.

Now with a sharp chisel lightly held in the fingers, bevel the

enamel margins, and with a wisp of dry cotton in the pliers, wipe the cavity clear of enamel chips, and the cavity is ready to receive the gold.

Slight variations are necessary in different teeth, according to the age of the patient, extent of decay, extent of wear by attrition, and recession of the pulp.

THUMB-SUCKING.

BY H. L. AMBLER, M. D., D. D. S., CLEVELAND, OHIO.

A—B—, when a baby, acquired the habit of thumb-sucking. He would take hold of his right ear with his right hand and put the thumb of his left hand into his mouth, in this way he would go to sleep, or if cautioned about this habit, he sometimes went to sleep without his thumb in his mouth, but it involuntarily got there sooner or later. The habit was not indulged in during the day when awake. In order to overcome this habit, various expedients were resorted to, such as putting gloves on; putting painkiller on his thumb; tying his hands together.

Doctor Bodecker says: "A vulcanite base-plate may be made with a very short pin set in just behind the centrals, pointing backward. It may be worn day and night, and does not inconvenience talking if the pin be not too long. At night it is especially useful, for at that time the habit is most marked."

James W. Cormany says: "I would suggest that the mother, when the child is asleep, talk to it, viz: 'Mary, you will not wake up while I talk to you,' and then folow with a talk just as she would to the child if awake; that what she is doing is wrong, that it is a bad habit, and she should not do it any more; in fact, 'You will not do it any more.' Repeat this to the child, say six times each night for two or three nights, when lo! it will be gone."

This habit continued until he was nine years of age, at which time he was broken of it by the various means used, and by continually telling him, not to suck his thumb.

The habit has not produced a V-shaped arch, but has spread the permanent upper centrals, so that there is a space of 3-16 of an inch between them, and has given a pouty appearance to the upper lip, and he still has the habit of mouth breathing, which is being corrected by tying a bandage under the chin and over the head every night, as there are no adenoids or polypi of the nasal pass-

says: "In case the incisors are separated and the roots parallel,

The upper incisors were drawn nearly together and held in place until new bone formed, by bands soldered together and cemented on the teeth. There are different ways of making an appliance for such cases, but I refer you to the "American Text Book on Operative Dentistry," page 795, where Doctor Farrar says: "In case the incisors are separated and the roots parallel, if you draw them together by an ordinary clamp band, the crowns will tilt toward each other until they touch at the mesio-incisal angles. Up to this time the apices of the roots were practically fixed points, and the alveolar process between the roots was condensed and absorbed as the teeth moved. As soon as the crowns touched each other at the mesio-incisal angles these became fixed points, and as the power was still continued at the necks of the teeth, the roots began to move until they were practically parallel. To prevent the crowns sliding past each other and overlapping, a guide was constructed as shown in Fig. 819. The same appliance will serve for retention."

This habit produced a tumor ¾ x ¼ inch on the inside of the lower lip and at seven years of age he was placed on the operating table, an anesthetic given and the tumor removed; no recurrence having taken place in last two years.

An incision was made in the mucus membrane and the tumor dissected out; this was a simple operation. The wound closed with two sutures; treated antiseptically, and there was a rapid and complete recovery; fed on liquid food. There was no pain accompanying the growth which was slow in formation, as it had been noticed for several years. The growth looked like a series of small cysts or lobules separated by their septa, containing a mucoid fluid.

It caused some inconvenience and considerable disfigurement by protruding the lower lip; up to the time of operating, it had never been medicated, or treated in any way. Long continued sucking of the thumb irritated the mucous glands and caused mild chronic inflammation which terminated in hypertrophy.

Tumor cells multiply like their prototypes, the normal cells, by a process of indirect division or segmentation known as Karyokinesis. The tumor consisted of dilatations of the mucus glands of the lower lip owing to a stoppage of the ducts (of the

mucus follicles) and thus the growth progressed in size. This tumor was homologous as it conformed to the tissues in which it grew, such tumors are apt to be benign, and this was no exception. The more the new growth resembles normal tissue, the greater the probability that it will be spontaneously arrested in its growth, and the greater the chances of its being benign; also benign tumors are common to all ages, slow in formation and do not infiltrate into the surrounding tissues; there is no lymphatic involvement unless they are inflamed. Generally the overlying tissue is hardly disturbed and there is rarely ulceration.

Some authors might term this growth a mucus cyst, as the mucous glands were obstructed and the sercretion which accumulated behind the obstruction dilated the glands forming a cyst or cysts of retention.

The contents of a cyst are always enclosed in an investing membrane, of the same structure in all essential particulars as that lining the original cavity from which the cyst had its origin. In this case the growth had to be dissected out because it was so firmly attached to the surrounding tissues that it could not be enucleated.

For the treatment of stomatitis, boric acid and a small amount of sugar in a little sterilized bag is given the infant to suck; may be result in a cure, but we would be afraid that the child would acquire the habit of thumb-sucking. We would also advise mothers not to give children a sugar-teat to suck, for the purpose of keeping them quiet and possibly of lulling them to sleep.

Thumb-sucking is occasionally acquired from the habit some children have of putting a corner of the pillow-case or sheet into the mouth and sucking it; thus it seems very important that young children should be very carefully watched.

THE LIQUID TO USE IN PORCELAIN WORK.

BY J. L. HELMER, D. D. S., KOKOMO, IND.

Alcohol or alcohol and water I have found is the best liquid with which to moisten the porcelain powder; for the evaporation takes place more rapidly and there is no steam formed; I attribute bubbles to the steam that is formed after the case is placed in the furnace. I may be wrong on this point, but anyway the rapid

evaporation of the alcohol allows one to pack the powder tighter, and when the case is inserted in the furnace there is not enough moisture to make pieces of the body pop off. I have found that I can work the porcelain body with pure alcohol better than I can with any other liquid. It will do no harm for you to try this and it may work better than what you are now using with which to moisten the porcelain body.

I am using platinum foil 1-2000 of an inch in thickness and like it better than platinum 1-1000 of an inch thick. Try it.

PRACTICAL POINTS.

BY DR. G. B. SPEER, YOUNGSTOWN, OHIO.

Get a common clap pipe, cut the stem in short lengths. In making a crown, set the post in the hole of the piece of stem. It is handy to handle and stands the heat.

My way of preparing plate when tooth is broken off is to take a piece of round platinoid wire, thread three-eights inch, with hacksaw slit wire and bend the sides out, making a T; slot the T so as to take the pins back of the heads; attach to pins with Lake's metal. Drill a hole through the plate and countersink in on the inside, then set the tooth with chloro-percha, draw to place with taper nut on inside, grind out smooth, and it makes a good, strong piece of work, is quickly done; you all know what it is to attach one or two teeth with vulcanizer.

DEFORMITIES OF THE JAWS AMONG EUROPEAN DEGENERATES.

BY EUGENE S. TALBOT, M. S., D. D. S., M. D., LL. D., CHICAGO, ILL.

The Twelfth International Medical Congress in Moscow, Russia, afforded a long-sought for opportunity to visit nearly all the countries of Europe. I made special observations of the degenerates in each of the various institutions for the defective classes. The objective points of interest were the prisons, insane hospitals, schools of idiocy, foundlings' homes, etc. The features of the soldiers, police and cabmen, as well as the citizens themselves, were incidentally noted for the purpose of comparison.

In a prison in Athens, containing four hundred and fifty-two

convicts, not a single V-shaped or saddle arch was found, although slight irregularities of the teeth due to local causes were observed. Arrest of the lower jaw, however, was the rule, which, together with the recession of the forehead, gave to the individual an idiotic appearance. Irregularity, in the relation of the upper jaw to the lower jaw, due to excessive and arrest of development was very common. The third molars, upper and lower, were present, but the vault was lower than the average.

In a Greek insane hospital (idiots are here confined with the insane), in Constantinople, of three hundred and thirty-two inmates (equally divided as to sex), only one case of V-shaped arch was noted; the vaults low, upper jaws large and full; but forty-eight per cent of the lower jaws were arrested; third molars normally developed.

In an Armenian insane hospital (idiots are here confined with the insane), in Constantinople, of two hundred and fifty inmates (one hundred and seventy-five males, seventy-five females) there was one partial V-shaped arch; the third molars normal and the lower jaw arrested in eighteen per cent. There were many mongoloid faces.

In the Vienna Insane Hospital, of three hundred and twenty-six insane and idiots, there were four partial V-shaped and one saddle-shaped. The third molars were normally developed in three hundred and eleven cases.

In a prison in Moscow, with two thousand convicts (two hundred and forty-seven of which were in the hospital) there were no contracted jaws or irregularities of the teeth. The jaws were very large and vaults low. In the Moscow Reform School there were one hundred and twelve boys, ranging from ten to eighteen years. Three had partial V-shaped arches. No saddle-shaped arches. The jaws, as a rule, were large and broad with low vaults.

In a Moscow insane hospital with four hundred patients of which twelve were idiots, no contracted arches were observed. The jaws were large and broad with low vaults.

In the Stockholm Insane Hospital with two hundred and seventy patients, there were six V-shaped arches, twelve partial V-shaped, four semi-V-shaped arches, twenty-three saddle-shaped, four partial saddle-shaped, eleven excessively developed upper jaws, three excessively developed lower jaws, nine hypertrophy

of the alveolar process, forty-two missing third molars, six missing laterals. Deformities of individual teeth numerous. The School of Idiocy of Stockholm, with one hundred and twenty inmates (eighty boys, forty girls), gave the following results:

BOYS.

Normal jaws	14
V-shaped	12
Partial V-shaped	10
Semi-V-shaped	4
Saddle-shaped	8
Partial saddle	1
Semi-saddle	2
Hypertrophy of the alveolar process	32
Macrocephalic	12
Microcephalic	5

GIRLS.

Normal jaws	15
V-shaped	1
Partial V-shaped	5
Semi-V-shaped	5
Saddle-shaped	8
Semi-saddle	1
Hypertrophy of the alveolar process	14
Macrocephalic	6
Microcephalic	4

One boy, aged thirteen, who was able to take care of himself, had a head thirty-two inches in circumference, one of the largest on record. The prison at Hamburg had eighteen hundred convicts. Large, well-developed jaws were the rule. Asymmetry in development, however, was frequently noticed, as well as other stigmata.

The School of Idiocy at Hamburg had six hundred children (three hundred and ninety-six boys, two hundred and four girls) and gave the following results:

BOYS.

Normal jaws	62
V-shaped	12
Partial V-shaped	16
Semi-V-shaped	8
Saddle	4
Partial saddle	3
Semi-saddle	2
Hypertrophy of the alveolar process	46
Macrocephalic	3
Microcephalic	4

GIRLS.

Normal jaws	28
V-shaped	4
Partial V-shaped	7
Semi-V-shaped	3
Saddle	1
Partial saddle	1
Semi-saddle	3
Hypertrophy of the alveolar process	25
Macrocephalic	5
Microcephalic	2

One boy of thirteen had excessive lower jaw, being one and a half inches beyond normal upper. A most remarkable case.

In the Insane Hospital and School of Idiocy at Amsterdam there were thirteen hundred and thirty insane and two hundred and fifty-five idiots. In the insane no contracted arches were found. Vaults low, sixty-seven. Hypertrophy of the alveolar process. No third molars missing.

IDIOTS.

Males	116
V-shaped	1
Partial V-shaped	3
Semi-V-shaped	1
Saddle-shaped	1
Females	139
V-shaped	1
Partial V-shaped	2
Hypertrophy of the alveolar process	19

The vaults low and jaws well developed.

The School of Idiots, Paris, six hundred and sixty-seven inmates (five hundred boys, one hundred and sixty-seven girls) gave the following results:

BOYS.

V-shaped	1
Partial V-shaped	40
Semi-V-shaped	2
Saddle	2
Partial saddle	1
Semi-saddle	4
Hypertrophy of the alveolar process	7

GIRLS.

V-shaped	1
Partial V-shaped	6
Semi-V-shaped	1

Saddle	8
Partial saddle	2
Semi-saddle	1
Hypertrophy of the alveolar process	4
The vaults were low.	

In Paris, the following prisons, Ci-apes, Le Depot, Grande Roquette, Mazas, La Sante, St. Pelagie and St. Lazan were visited. After examining two thousand six hundred convicts, no deformities of the jaws were observed of special value.

In England, I examined the following public asylums: 1 Earlswood Asylum. 2. Darenth School for Children. 3. Darenth School for Adults, Hanwell Hospital for the Insane and the following private institutions: 4. Mrs. Langdon Down. 5 Doctor Shuttleworth. 6. Doctor Beach.

A day was spent at the Criminal Insane Hospital, Broadmore. Fully one-half the inmates were so violent that the task was given up. Enough, however, was observed to warrant the opinion that fully eighty to eighty-five per cent had marked deformities of the jaws and teeth.

Hanwell Hospital for the Insane, Southall, had two thousand and eighty patients. These people were mostly of the dependent class, who became insane after maturity. The class of deformities which are under discussion were therefore not common. Hypertrophy of the alveolar process and excessive and arrested development of the jaws were, however, frequently noticed. Stigmata of degeneracy of head, face, eyes, ears, body, hands and feet were the rule.

Earlswood Feeble-minded Asylum, Red Hill, Surrey, contained six hundred and seventy of which four hundred were boys and two hundred and seventy girls.

BOYS.

Normal jaws	31
V-shaped	108
Partial V-shaped	69
Semi-V-shaped	11
Saddle	19
Partial saddle	27
Semi-saddle	13
Marked arrest of upper jaw	104
Marked protrusion of upper jaw	64
Marked protrusion of lower jaw	11
Marked arrest of lower jaw	306

Lateral incisors arrested	46
Lateral incisors lost	28
Third molars lost	180
Showed malnutrition of teeth	160

GIRLS.

Normal jaws	24
V-shaped	67
Partial V-shaped	86
Semi-V-shaped	24
Partial saddle	8
Semi-saddle	23
Cleft palate	1
Marked arrest of upper jaw	87
Marked protrusion of upper jaw	24
Marked protrusion of lower jaw	1
Marked arrest of lower jaw	237
Lateral incisors arrested	30
Lateral incisors lost	16
Third molars lost	85
Showed malnutrition of teeth	78

Darenth School for Feeble-minded, Dartford, Kent, had one thousand inmates (six hundred and forty boys, three hundred and sixty girls).

BOYS.

Normal jaws	150
V-shaped	143
Partial V-shaped	140
Semi-V-shaped	105
Saddle	35
Partial saddle	20
Semi-saddle	10
Marked arrest of upper jaw	450
Marked protrusion of upper jaw	150
Marked protrusion of lower jaw	23
Arrest of lower jaw	600
Lateral incisors arrested	68
Lateral incisors lost	42
Third molars lost	388
Hypertrophy of upper jaw	150

GIRLS.

Normal jaws	90
V-shaped	118
Partial V-shaped	80
Semi-V-shaped	65
Partial saddle	8
Semi-saddle	20

Marked arrest of upper jaw	310
Marked protrusion of upper jaw	90
Marked protrusion of lower jaw	9
Arrest of lower jaw	340
Lateral incisors arrested	32
Lateral incisors lost	19
Third molars lost	111
Hypertrophy of upper jaw	90

Darenth School for Adults, Dartford, Kent, contained one thousand and fifty inmates (four hundred and fifty males, six hundred females).

MALES.

Normal jaws	60
V-shaped	105
Partial V-shaped	93
Semi-V-shaped	53
Saddle	31
Partial saddle	5
Marked arrest of upper jaw	295
Marked protrusion of upper jaw	162
Marked protrusion of lower jaw	8
Arrest of lower jaw	409
Lateral incisors arrested	48
Lateral incisors lost	37
Third molars lost	442
Hypertrophy of upper jaw	58

FEMALES.

Normal jaws	40
V-shaped	177
Partial V-shaped	121
Semi-V-shaped	79
Partial saddle	8
Semi-saddle	10
Marked arrest of upper jaw	436
Marked protrusion of upper jaw	209
Marked protrusion of lower jaw	17
Arrest of lower jaw	580
Lateral incisors arrested	72
Lateral incisors lost	62
Third molars lost	597
Hypertrophy of upper jaw	36

Of the children, five hundred and seventy-six showed malnutrition in utero; two hundred and eighty-two girls showed malnutrition in utero. Of the adults, three hundred and ninety-six males showed malnutrition in utero; five hundred and seventy-eight females showed malnutrition in utero.

Mrs. Langdon Down's School, Normansfield, Hamptonwick, contained one hundred and forty-seven inmates (ninety-seven boys, fifty girls).

BOYS.

Normal jaws	12
V-shaped	36
Partial V-shaped	20
Semi-V-shaped	15
Saddle	9
Partial saddle	13
Semi-saddle	28
Arrest of upper jaw	86
Third molar missing	92
Lateral incisors missing	16
Teeth showing arrest and grooves	46
Hypertrophy of the alveolar process	19

GIRLS.

Normal jaws	5
V-shaped	10
Partial V-shaped	9
Semi-V-shaped	12
Saddle	7
Partial saddle	1
Semi-saddle	16
Arrest of upper jaw	45
Third molars missing	47
Lateral incisors missing	8
Teeth showing arrest and grooves	21
Hypertrophy of the alveolar process	7

Of the twelve normal dental arches (males) seven were hypertrophied. Of the five normal dental arches (females) three were hypertrophied.

Doctor Shuttleworth's Private School, Richmond Hill, had twelve boys and girls. There was one normal jaw, but no laterals. There were two V-shaped, five partial V-shaped, one semi-V-shaped, two partial saddle, and one semi-saddle-shaped jaw. Four hypertrophy of the alveolar process. Nine had notched and pitted teeth, and all high vaults. These patients were too young to decide as to the number of third molars, but five had one or both laterals missing.

Doctor Fletcher Beach's Winchester House, Kingston Road, had thirteen patients. There were three V-shaped, eight partial V-shaped and one semi-V-shaped jaw; six hypertrophy of the

alveolar process; eight had notched and pitted teeth; all high vaults. These patients were also too young to decide as to number of third molars. Four had one or both laterals missing.

These reports are tabulated in the order in which they were made. They show a gradual increase of degeneracy from the examinations made in Greece to those in England. It will also be noticed that the deformities of the jaws and teeth are more numerous among the better classes, such as are shown in the private institutions of Mrs. Langdon Down and Doctors Shuttleworth and Beach, than among those of the poorer classes in the public institutions of England.

From examinations previously made in Spain, Italy and Switzerland among the degenerate classes, a very small percentage of the deformities of the teeth and jaws was found. As compared with the American-born degenerate classes, the percentages are greater than those of the Latin races and the Slavs, Germans, Austrians, Danes and Dutch, but from twenty-five to thirty-five per cent less than the Swedes and English.

These observations show that operation of the law of economy of growth* whereby the struggle for existence between organs† centers, in unbalanced organisms with peculiar intensity between the later higher acquirements and the lower. This struggle most effects structure as transitory in evolution‡ as the jaws and teeth. In races intellectually high, the effect of the struggle on such structures will, as shown in the present statistics, be most marked in contrast with races lower in evolution where jaws and teeth are less transitory in type.

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CONCERNING NITROUS OXIDE GAS.

BY D. E. SHEEHAN, D. D. S., HAMILTON, OHIO.

Some time ago, while administering nitrous oxide gas, I noticed a very pronounced freedom from the usual initial adverse symptoms, such as labored breathing, hysterical excitement, flighty heart action, etc., and I remarked to others in the room that if such a perfect result could be obtained in all cases, the anesthetic would be ideal. After the patient had left, I inadvertently discovered a leak in the place of attachment between the gas bag and tube, and thereupon made the following deductions, which I am pleased to say have merit, as subsequent experiments have proven.

Attenuation of the gas had taken place in the administration of which I speak, the atmosphere having been drawn into the inhaler with the gas, thereby making a mixture highly desirable.

When gas is administered in the usual manner, there is a too sudden change in the lung contents and a choking sensation follows. The patient will experience a smothering very like that following the administration of ether or chloroform. If, however, you substitute an attenuated instead of a pure nitrous oxide, you will always prevent the shock to the patient which they so frequently experience. The rapidity of the pulse and labored breathing attendant at this time are primarily due to nervous excitement. Add to this a complete change in the medium inhaled, is it any wonder that suffocation follows? It is very like going from a cool to a hot room, or from a high altitude to a lower one. It is an irritant against which our lungs naturally rebel.

There is a psychological feature, too, in all anesthetics, which tends to disquiet the patient, and unless your patient is amply fortified by previous experience, visions of death confront him when no pathological change whatever has taken place. We have noticed this feature and are aware that when the mind of our patient is at ease we can more readily bring about complete anesthesia. A mixture of gas and atmosphere does not fill his mind with fear as does pure nitrous oxide.

No special apparatus is necessary to make your mixture, as the ordinary S. S. W. inhaler can be so manipulated as to allow atmosphere and gas to enter it simultaneously. By pushing in the valve half way or more or less, according to the mixture desired,

the thing is done. After the patient has reached that state of repose where the anesthetic may be pushed, the atmosphere is cut off and pure nitrous oxide administered to complete anesthesia.

I give these deductions to the profession that it may receive their benefits if they are in any wise new to some of the members.

PRESIDENT'S ADDRESS.*

BY J. B. BEAUMAN, D. D. S., COLUMBUS, OHIO.

Another year has passed into history, and once more we have assembled for the thirty-eighth session of the Ohio State Dental Society, which we have good reason to believe will be one of the best, and we hope the most profitable, meetings the society has ever held. We extend a most cordial greeting to all the members and friends, and hope all may return to their homes feeling that they have been well repaid by being present. We most heartily wish every one may feel perfectly at home while here and feel free to take part in the program with us and help to make a success of this meeting.

The program that has been prepared and presented for your consideration we believe will meet with your hearty approval. The program and work in preparation for this meeting have cost the several committees much time and hard labor, and I freely accord to these committees all credit for the successful manner in which the work has been accomplished.

Complaints have come to our notice from members of the profession that little attention has been accorded them, and that they could not get acquainted. I would therefore charge upon the committee on membership, also the members in general, that if you see a man you do not know, take him by the hand, and make him feel that you want to know him; ask him his name, where he lives, and where he was born, how long he has been a dentist, etc., and if you find him eligible, get his application for membership.

We have in the State of Ohio about twenty-six hundred members of the dental profession, and out of this twenty-six hundred, we have less than three hundred active members in this society. Is it possible that we have so few men in the State who care for the elevation of the science of dentistry and the progressive work of this society?

*Read before the Ohio State Dental Society, December, 1903.

This society (as well as that of all others) is truly an educational institution, and every one can receive much benefit by becoming an active member of the society. I therefore recommend that the society at this session take some decided action and formulate some plan whereby the eligible dentists of the State may be brought into close touch with the work of this society.

The second Article in our Constitution clearly defines the purpose and the object of this association, which should be upheld by every one who loves his profession and humanity. The profession has been making great advancement in the past and to-day the work is onward and upward, and yet there are much greater fields to explore by the twentieth century dentist. Every man who wishes to keep pace with his profession in the twentieth century must make use of all the helps at his command, and there is none more efficient than to connect in a practical way in society work.

Commercialism has taken hold of the people in all walks of life to an alarming extent. So much so, that man has gone mad in pursuit of the almighty dollar. This same spirit prevails in dentistry as well as in all other occupations. The dentist who has lost sight of his higher obligations to humanity and can see nothing but dollars and cents, has become a mountebank in his profession and should be ostracised by all true and honorable professional men. Empiricism cannot be driven from the field by legislative action and the enforcement of law. The public looks upon it as a line of persecution for selfish ends. The law may prescribe certain rules and require of the graduate a most rigid examination before a board, but when he has passed said examination and has received his diploma and certificate, he is then free to go forth and advertise all kinds of nostrums and practice all manner of deceptions upon a credulous public, and the law cannot lay hands upon him for not complying with the code of ethics.

While on the other hand, it is most desirable that all should work for a uniform code of laws in all the States of the Union, so that the man who has passed a creditable examination in one State may be entitled to equal privileges in every other State.

The law should guard the rights of the public as far as it is in the province of law; but there are other moral obligations resting on every man who enters a profession, that have to deal with the physical being (which is the most sacred to the individual of anything in life). He should from professional pride have no

desire to mutilate the human body, in any manner whatever, for commercial or selfish gain. To purify the stream, you must purify the fountainhead from whence the stream flows. As long as some of the dental colleges are run in sharp competition on commercial lines, by sending agents out through the State and country, working up matriculates for their respective schools, giving rebates, etc., it will be slow progress in eliminating commercialism and empiricism from the profession. The way to break down empiricism is not by law, but by building up a higher standard of scholarship and dignity in the ethical relations in the profession.

Our present civilization demands more highly educated and cultured men in the learned professions. The twentieth century dentist must be a cultured and scholarly man. If some colleges are run on commercial lines, can you question the right of the dental graduate when he goes forth from those schools, to commence business by advertising his wares, and conducting his practice on channels of commercialism? To rectify these errors is the work of this society, as well as of the profession at large. As we shall have a paper on our code of ethics, I will not dwell on the subject further.

There is one great responsibility resting on the profession, and one that should command most serious consideration, and that is the education of the public in general to proper understanding of the care and treatment of the natural teeth. Parents should be most carefully instructed as to their responsibility in the care of their children's teeth, both temporary and permanent. I formulated a plan many years ago that would work if put into practice, but time and space will not permit of a delineation here.

It is an easy thing for the president in his annual address to make recommendations, but it is not so easy to get the society, as well as the profession, to put them into practice. I would exhort each and every one to pluck fruit from the topmost branches of the tree of science, as in the higher branches the most perfect and beautiful fruit grows, where the sun shines and the light is unobstructed.

In conclusion, since our last session we have lost by death two of our most worthy and prominent members, Drs. Otto Arnold and Johnathan Taft. We shall all feel this bereavement when we no more find these familiar faces with us. Both these men stood for the higher education for the dental profession. No man

has spent more time and money in attending society meetings than Dr. J. Taft. He always stood ready to take part in reading papers, in the discussion of papers read, or to take part of committee work in any society. In 1860 or 1861, we organized what was called the Central Ohio Dental Society. The society held four or five annual meetings. Doctor Taft was with us at Zanesville, Delaware and Mt. Vernon meetings. At Mt. Vernon, steps were taken to organize the State Society. The charge was placed upon Dr. Taft to send out the call, which was done, and assembling was had in the old Naughton Hall. Taft took an active part in the organization of this society at that time. He has never missed in attendance since that time, but is now absent for the first time. All honor to the man who has been thus faithful in his obligations to the society he helped to organize.

I know of but two who helped in the organization of this society in 1861 who are living, and those are Dr. H. A. Smith and myself. The years are passing and it will soon be left to others to carry the work forward until the depth of dental science has been explored. I would exhort each and every one to climb to the topmost rung of the ladder. Climb high. What you have to do, do it to-day. Time is a pace.

"Through this toilsome world, alas,
Once, and only once we pass,
If a kindness we may show,
If a good deed we may do
To our suffering fellow men,
Let us do it when we can,
Nor delay it, for 'tis plain,
We shall not pass this way again."

ESTHETIC DENTISTRY REQUIRED.*

BY W. T. M'LEAN, CINCINNATI, OHIO.

The therapeutics of substances derived from the mineral kingdom, either in the natural state or after modification by those who are conversant with that art, has already advanced to a place of actual permanency in our specialty, but a proper classification esthetically as applied to dentistry is far from being understood by many of our profession, if what we are compelled to gaze upon

*Read before the Ohio State Dental Society, December, 1903.

daily in the mouths of many individuals indicates. The prejudice that exists among persons of refinement has indicated to me that a greater degree of esthetic dentistry is required, and my apology for complying with the request of your program committee is, that I have frequently felt justified in criticising many of my confreres, owing to the fact that we are so frequently compelled to gaze with amazement upon the incising portion of the masticatory apparatus of man and womankind that has been embellished, if you please, with one or more all-gold substitutes.

My purpose in making this statement upon this occasion is to particularly criticize the lack of art which is noticeable in the mouths of patients almost everywhere, and to which our profession is being criticized by refined members of the laity. To me nothing can be more inartistic than a noticeable display of gold in the mouth. Our present facilities for the restoration and replacement of the natural teeth with material other than that of gold is nearly perfect, and why there are so many of the profession who neglect to utilize the more esthetic and advanced methods of tooth restoration and replacement, is to me an enigma. Are our dental colleges to blame for this lack of art, or is it indifference upon the part of dentists? There are many paths to follow regarding the salvation and substitution of the teeth, and as you are aware, conditions must be noted in order to maintain a certain degree of permanence without any sacrifices pertaining to the retention of natural appearance.

Suggestions offered the dentist by patients are too often accepted, and incongruities galore are produced. Every effort should be made in all classes of dental operations to simulate nature, overcome irregularities and lessen artificiality to the minimum by art, and art only.

I wish I were empowered to appoint each gentleman present as a committee of one upon "dental esthetics," so that they might make an effort at least to eliminate at every opportunity the lack of art displayed on the part of confreres which is noticeable in much resultant dental practice. There is no reasonable excuse for placing an all-gold crown, or using the same for an abutment for bridge-work, upon any of the six anterior teeth, and rarely upon the first bicuspid. I am fearful of the degradation our profession shall experience ere long if there is not a change made in this particular lack of refinement in rendering dental service.

It has been said by some that patients insist upon having certain things done, and if you do not do some incongruous operation upon their teeth as they specially request, they will go elsewhere. When patients of that class consult me, I set them right in a very few minutes, by politely offering them the opportunity of doing their work themselves if they know so much about it, and proceed to dexterously dismiss them from my office.

Gentlemen, this is a topic of greater interest to dentistry than some of you at this time may appreciate, and I have no objection in being placed on record as stating that it is to me the most barbarous practice possible, and should be eliminated from all esthetic dentists' practice. If this condition is not thwarted in its present state our profession will become lowered, and be placed, and forever remain, among the tonsorial and medicated-bath class of business enterprises. Esthetic dental service will always be appreciated by the elite, and a few practitioners will attract that class of patronage. But why not all be honored likewise? Many practitioners are seemingly indifferent regarding the most artful manner in which dental operative procedures should be performed, and the criticism most likely to be made of the views herewith expressed, is the lack of stability where gold is not used. I wish to state that the fracture of porcelain when used in place of gold, usually results from imperfect adaptation or malocclusion and not from any weakness of the material mentioned.

In concluding, I most earnestly hope that esthetics, as applied to dentistry, may be more carefully considered, so that our profession will not be placed beneath its sphere among other professions and societies of art.

DISCUSSION.

Dr. W. A. Barber.—I find it a difficult matter to discuss a paper when you so heartily agree with the essayist. Do not think any one of us can have any difference of opinion regarding the lack of art displayed in placing an all-gold crown on teeth referred to by the Doctor, but one or two points in the paper, however, I cannot agree in regard to.

First, I cannot help thinking a reaction has set in against the use of the gold crown on anterior teeth, not only among the dentists but among our patients as well. For a time everyone seemed to be carried away with the idea that they must have an all-gold crown conspicuously displayed in their mouths, and I firmly believe we do not have to contend with this state of affairs as much as heretofore. Is it not more often the case when you are about to insert a large gold filling in an anterior tooth that your

patient will say, "Doctor, can you not use something else? I dislike a display of gold so much." Does it not prove something is taking place in the minds of the laity against the use of this method?

Again I differ with the Doctor in regard to the handling of that patient who wants that incongruous operation performed. He informs us that he dismisses them from his office. I cannot consider that the right kind of an impression to instill into the mind of the young practitioner, it is contrary to his high idea of professional treatment. That young man's rent and a dozen other expenses may be staring him in the face, and he should be instructed how to handle that patient without a financial loss to himself, rendering that patient the best possible service known to modern dentistry and at the same time retaining his self-respect.

American dentists lead the world and the reason given by eminent men both at home and abroad is the fact that American dentists are teachers, and I do not consider that teaching is confined to the halls of our universities.

The dentist at his chair is teaching day after day and year after year and he should be able to satisfy his patients that what he wishes to do for them is just what he would have done in his own mouth, the same conditions present.

Dr. L. E. Custer, Dayton.—The first thing that I should recommend is the short length of the paper, and being directly to the point. I believe, however, that the time is fast arriving when the dentist will be better able to comply with the requirements of the paper. The use of porcelain in many branches of dentistry is certainly increasing, and whenever porcelain is used for the displacement of any metal, I feel that the operation is at least more esthetic; whether it may be more durable or not is the question to be determined later on.

Doctor Stephan, Cleveland.—The paper brought out the point that we must dispense with the glare of gold. It did not exactly state just what we must use. An esthetic dentist should use porcelain in the anterior teeth, I believe was the essayist's contention. Porcelain is not a practical substance, where these crowns are placed, as it is liable to fracture and yet I have put these on for years. I fill with the porcelain and dowel it down and let it stay there; yet the porcelain will break off at times. Now, if we are going to put on porcelain crowns, we must have something so that when it breaks we can replace it comparatively easy.

I was glad to see that the use of certain porcelain crowns that could be replaced—Davis crowns for example—were advocated. While I am not connected in any way with the use or sale of that crown, still these crowns have their claims for easy replacement when broken, and are going to bring porcelain into use in bridge-work, as well as crown-work; but they will have to modify the crown a little, and if there is any gentleman present a member of this society who is able to bring that about, I think we can make this very useful to the profession at this time.

Dr. W. T. McLean, Cincinnati.—That is quite an elaborate discussion, I must say. I am somewhat amazed that the members do not consider this topic worth considering.

It is the downfall of our profession, just as sure as fate, to use gold caps—we have them in Cleveland, Cincinnati, Columbus and other places. How many laterals and centrals do we see in people's mouths having gold crowns? Why is that? Some put 16 or 18 metal crowns in for a small sum. Why? Because it is easier to put them in than to fill the teeth properly. Is it the dental college that is driving out people who have no more sense or art, or education than that, or is it indifference on the part of the individual? I tell you, gentlemen, the dental profession twenty years hence will be so far advanced that we won't see any more gold crowns. I believe this from the education that is being given our dentists at the present time.

Now as to ethics. Ethics embraces a vast amount of information. It depends not only upon our own actions, our own words toward our confreres and our patients, but to God Almighty. It seems to me that it is not necessary to discuss this subject every year; it always comes up. I am pretty near forty-five years of age, and I want to say to you that the early training I had at college and associating with college men in the past twenty-five years, has made me ten times more ethical than any man can be by reading this paper, and by meeting such men as we have here and have had at preceding meetings of this association.

One gentleman remarked to-day about the breaking of porcelain. "The breaking of porcelain is almost invariably in some defect in the making of porcelain"—that is a pretty stiff statement. It is the bad manipulation on the part of the operator. I have some specimens in my office that I have taken from patients' mouths. I have had to take them out.

Art—somebody spoke something about art. How many of us have been taught art? Very few. Symmetry of features, peculiarities of physiognomy, color of hair and eyes, skin of patient—are they considered when teeth are put in the mouths of people? They are in some cases, of course, I see some here who do that, and I see some who do not. It is simply because they have not been taught art. I know dentists who buy 50 sets of teeth just alike. There are no two people who are alike. There are different kinds of teeth, different color, size, etc., different conditions of the mouth, and all those things should be taken into consideration. Therefore it is policy to use a half dozen different teeth selected from a half dozen different sets.

NITROUS OXID ANESTHESIA.*

BY WM. A. MILLS, D. D. S., BALTIMORE, MD.

Lecturer on Nitrous Oxid, Baltimore Medical College, Dental Department, Baltimore, Md.

In this introductory lecture, the object is not, at this time, to enter into any lengthened particulars about the administration of nitrous oxid as a general anesthetic, its physiologic effect upon the human system, its advantages, or disadvantages, etc.; but to give you only a resume of some of its salient points, concluding with a little kindly advice; reserving all definite and minute details for future lectures.

Of the many blessings which God has given to man, none has done more to relieve the pangs of suffering humanity than the discovery of modern general anesthesia. To-day, extensive and serious operations are performed upon the most highly vitalized tissues of the most timid and nervous subjects, while they are absolutely unconscious of what is being done, and on return to sensibility often awake as if from pleasant dreams; consequently, thousands of lives have been saved that a few years ago would have been allowed to come to an untimely end. Then, if a surgical operation was considered feasible, to survive the shock of the surgeon's knife, in many cases the patient had to possess the physical endurance of the savage American Indian, or the stoic indifference of the Roman gladiator.

When the subject was being prepared, no tender-hearted

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nurses stood by or assisted, and by their sympathizing and cheering words gave comfort and strength to the trembling patient to nerve him for the trying ordeal. In the place of these soothing environments, four to six pairs of burly hands seized the patient, and ofttimes, while on the eve of collapse, bound him hands and feet, placed him upon the operating table and held him there, while the man of Bismarckian determination plied his scalpel as though the prostrate body was that of a bullock or lifeless clay.

Dr. Adolph Lorenz, of the late bloodless surgery fame, said, in a lecture before Northwestern University, "One, indeed, need not wonder that the poor, sick man in past centuries perceived in this sharp-eyed youth armed with fire and the sword the typical surgeon of that time—an executioner rather than a saviour. To that was added the terrible certainty of feeling without relief every motion of the knife, every touch of the glowing iron. Then, when the terrible torture was past and the brutal work of the surgeon was finished, his responsibility was at an end, for, to speak briefly, the course of the wound was left more or less to favorable or unfavorable chance." A very pathetic incident about a surgical operation performed before the time of anesthesia and asepsis, followed by the death of the patient, is recorded in a little book called "Rab and His Friends," by Dr. John Brown.

We of to-day are so familiar with the advances made in surgery and anesthesia one can scarcely believe that such barbarity, under the name of surgery or medicine, ever existed; yet the time is not so far in the dim past that all of the subjects of such horrors have passed away; for many are still living who bear the marks of those terrible times upon their bodies, as it has been but a little over fifty years since the new era had its dawn. In 1800, Sir Humphrey Davy gave to the world the suggestion that perhaps nitrous oxid could be made to produce anesthesia. He said, "As nitrous oxid in its extensive operation appears capable of destroying physical pain, it may be probably used with advantage during surgical operations, in which no great effusion of blood takes place."

In the year, 1844, this prophecy was verified by Dr. Horace Wells, a practicing dentist. He, believing that it was possible to have a tooth painlessly extracted while under its influence, administered it to himself until he became insensible, when one of his teeth was removed by a friend, the late lamented Dr. J. W. Riggs.

After he returned to consciousness he declared he had felt no pain, or was he cognizant of the time of its removal, and thus it was that modern anesthesia had its beginning, followed closely by the discovery of the narcotic properties of sulphuric ether by another practicing dentist, Dr. Wm. T. G. Morton, in 1846. These two agents are at the present time the most universally used all over the world. All praise and honor to these fellow practitioners! As long as medical history shall last, the names of Drs. Wells and Morton will never die or be forgotten.

The most commonly used agent for the production of general anesthesia by dental practitioners is pure nitrous oxid, a few using the addition of ether, or pure oxygen. Many new appliances have been introduced for its administration, some of which are improvements in some points upon the old; but none of them can be likened unto "a thing of beauty or a joy forever," but have added to the already unsightly apparatus something more cumbersone and terrifying.

Of late much has been said about the mixture of nitrous oxid with pure oxygen, the claim being that the cyanotic conditions usually accompanying ordinary nitrous oxid anesthesia, is to a great extent, if not entirely, overcome. As yet, it has not been definitely settled whether the state of unconsciousness, produced by nitrous oxid, is caused by some inherent faculty, irrespective of its asphyxiating agency, or wholly the latter.

That nitrous oxid does contain within itself the power to produce insensibility has been proven to some extent by administering it under pressure by the way of the nose, while the mouth remains open and free to take in air. The same can be said when using the ordinary nose-and-face piece if a little air

is continuously admitted during the inhalation, just sufficient to maintain the normal quantity of oxygen as contained in the blood. In the hands of an experienced operator, under this system, there is no need of adding ether or pure oxygen for minor surgical operations, for the respiration is natural, no signs of cyanosis are manifest, the anesthesia being true; but a little longer time is required to produce narcosis. If a longer anesthesia should be needed for major operations, it can be mixed with ether, or pure oxygen, as the case may require.

During the administration of nitrous oxid alone, all things being favorable, the respiratory system is more or less disturbed, but the heart's action is but little changed, if any, only stimulated.

Two definite first impressions are made upon all patients alike, a tingling sensation along the line of the whole breathing apparatus, and the sweetish taste of the nitrous oxid. There are no well-defined stages through which the patient passes until he reaches that of total unconsciousness, notwithstanding what the text-books say upon the subject; for they, unlike the laws of the Medes and Persians, are subject to change, as all the rules there laid down have been again and again violated.

It is well to be familiar with all the theories, but let it be impressed upon your minds that all you may read upon the subject has not as yet been proven; for those who have administered nitrous oxid to patients of different temperaments, and suffering under various abormal conditions, know, that neither the physiologic nor the psychologic effect is ever the same in any two patients. The question may be asked: why does it not act similar in all cases? This might be answered by: why is it that the same drug, especially morphine, does not effect all individuals alike?

The question cannot be positively answered at the present time. To administer nitrous oxid successfully to very nervous or hysterical patients, two things are very necessary; first, gain the confidence of your patient by gentle, cheering and assuring conversation; second, spare the patient as far as poss-

ible the depressing effect of all unnecessary display of instruments and apparatus, etc. Under no circumstances ever administer nitrous oxid to children who are mouth breathers, for the most of them suffer from polypus of the nose, are as a rule of a very low state of physical and mental debility. * *

Dr. Wallace says, inhalation by the way of the mouth is preferable in all cases to that of the nose.

"Bad subjects for anesthesia, according to Hewitt, are most generally robust, healthy muscular individuals; the spare sallow women are more generally the ideal patients for anesthesia. The bad subjects he considers under six heads: 1. Patients whose general health is good—possibly exceedingly good—who have some physical peculiarity rendering them more or less liable to intercurrent embarrassment or arrest of breathing. 2. Patients whose respiratory tract is in some way encroached on or whose respiration is in some way hampered by pathologic or other conditions. 3. Patients suffering from certain grave visceral or constitutional affections. 4. The highly nervous or excitable patients; those suffering from various nervous affections, and those given to the excessive use of morphine, alcohol or other drugs. 5. Patients having the characteristics of two or more of the foregoing classes. 6. Patients who prove to be difficult or bad subjects without any discoverable cause."

Under the last list may be classed those who cannot be made totally unconscious, no matter how long the nitrous oxid may be inspired—the tolerance being so great that it amounts to an idiosyncrasy.

During dental operations there is ever present the danger of blood being drawn into the air passage, or swallowed; and as no subject can digest his own blood it acts sometimes as an emetic; in either case, without watchfulness and prompt action on the part of the operator, the patient is liable to die of suffocation; especially so, if patient has partaken of food a short while before nitrous oxid is given.

It is claimed by some, that when liquid nitrous oxid is allowed to vaporize rapidly, it becomes very cold and when

inhaled irritates the membranes of the respiratory tract, producing congestion of the throat, nose and lungs, followed sometimes, with very serious consequences. To guard against this, it is recommended that the nitrous oxid be allowed to expand into a metal receiver and be permitted to stand for a while before being administered.

This is denied by others, and they contend that if pneumonia, etc., are produced, that they do not originate from the lowering of the temperature of the mucous surfaces, but is probably due to an infection from the face-piece or inhaler; and it is also presumed, that to produce the lesions, some inflammatory process of the involved parts must be co-existent with the administration. This may be true or not, but it is well known, that a local application of a saturated solution of camphor in ether, when applied to the gums for the pain-impinge upon the buccal wall, you destroy the esthetic effect; less extraction of teeth, has produced all the conditions ascribed.

Similar cases have been reported in the medical press to have followed the administration of chloroform, when artificial light was used.

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When administering nitrous oxid to females, always have present, an assistant, a friend or relative of the patient, not only for help in case of need, but as a protection against any false accusation, which may have its origin during the state of an anesthesia.

The time when patients are most susceptible to hallucinations is during the semi-consciousness stage when nearly all of the senses are greatly intensified; a slight twinge of pain being magnified into a torture, a tread of a foot sounding like the report of a gun, etc. Patients of very nervous temperaments when suffering from such delusions regain their mental equilibrium very slowly, and are the cases liable to have erotic or sexual illusions; many such are recorded, and several innocent victims have been thrown into prison in consequence.

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Although anesthesia with pure nitrous oxid is comparatively safe, it is nevertheless subject to all the rules regulating the administration of chloroform or ether; and when combined, with either, its dangers are proportionately increased; these facts should never be forgotten. Therefore, to treat your patients intelligently and succeed in the highest degree, there will be demanded of you, more than a superficial knowledge of the general practice of medicine to enable you to diagnose diseases of the heart, brain, and kidneys; all of which contraindicate its use; also a familiarity with all the accepted remedies, treatments, and appliances to enable you to act quickly and knowingly if suddenly called upon, in case of hemorrhage, lodgment of foreign bodies in the windpipe, fainting, or collapse; otherwise you will fail to perform the duties which you not only owe to your patient, but to yourself.

Ignorant anestheticists in disregard of these essentials, have trusted too much to chance to carry them over the quicksands of presumption, and have been swallowed up by dismal failure. It is to be hoped that the time will soon come when all applicants for membership in the dental specialty, shall be found truly worthy of the degree of D. D. S., and form during their professional career bright stars in the crown of their alma mater.

To place a human being upon the very brink of eternity for the mere sake of dollars and cents, should under no condition be entrusted to the skill and wisdom of a charlatan or a mountebank. Fortunate is the dental student whose school is directly connected with a medical college where all necessary clinical instruction can be gained by witnessing the daily surgical operations, when the different anesthetics are used, etc. If you are diligent seekers after professional information, you will grasp every opportunity to store up knowledge, whether strictly medical or dental, for the occasion will arise when you will have need of it, and then you can feel yourself master of the situation.

At the present time our specialty is one that is making

rapid strides, and with nothing less than the most persistent effort to gain wisdom in many directions, will you be enabled to keep up with the advance guard.

If, after you graduate and you have a hesitancy in administering anesthetics, recommend your patients to some competent fellow-practitioner, whom you know to possess the capacity, learning and experience necessary for such professional services.

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It is claimed that when a dental practitioner uses any agent for general esthetic purposes, it is a "stepping over the line" which separates medicine from dental surgery, or *dentistry* as some seem determined to call it. This assertion is most emphatically denied; for the practice of dental surgery, or more properly speaking *stomatology,* is a part and parcel of the practice of medicine. It is true, that a great part of it, is that of prosthesis, but to contend that it is not a specialty of the healing art is like denying that the Rocky Mountains have no connection with mother earth. Dr. F. E. Wallace says, "While medicine and dentistry are two distinct studies, the foundation principles of both are alike, and the two can never be independent of each other." The time is not far distant when this question will be settled forever in the affirmative; already, the Medical and Chirurgical Faculty, of the State of Maryland. has so recognized it.

In conclusion: If any of you are honestly desirous of becoming worthy and proficient professional men, and aspire to reach the highest ideals, you must be intelligent, broad-minded, humane, and above all—moral; ever remembering that the one who makes the largest amount of money is not always the most successful, or the happiest; but he only, who gives conscientious services in relieving the miseries of suffering humanity, and by his example leads them nearer to their Creator.

CORRESPONDENCE

CITY VS. COUNTRY DENTISTS—CASES IN PRACTICE.

Some time ago, while looking at the report of a society of dentists, I was much surprised and angered, by the manner in which the practitioners of the small country towns are looked upon by some of those who practice in larger towns, though they may all be graduates of the same school.

The man whose words aroused my anger seemed to think that the city dentist was a sort of fountain from which we poor isolated cusses draw our information. For the benefit of that class of enlarged craniums, I would say that we who practice in small towns are graduates of the leading colleges in the United States and that we have, as a rule, the most honest and intelligent patients to practice upon.

We are not heard from as often as are our city brethren. Why, you ask? The country dentist has something to do besides stealing and publishing some one else's ideas. He doesn't have to advertise for his practice. Keeps his office neat and attractive, pays his fees regularly, and when not devoted to his patients, tries to instruct the children of his schools in the care of their teeth. How many city dentists do that? He has three square meals per day for himself and family, and he knows some who are in cities who—

If you have time not devoted to your patients, why don't you let the public hear from you? The journals are open to all, you say.

Below I will give a city dentist's remark, and then you can answer for yourself: "Say, old man! Did you see that article old Blank had in the——? It was on the taking of impressions. The poor stiff! I wonder if he really thinks that he can teach us or give us any points."

Now, how would any of you exalted brethren like to hear your efforts greeted in this manner?

I have witnesses who will prove that this statement was made in my town by a dentist who married a rich widow, who can afford to let him play at the practice of dentistry in Chicago. There are many such wiseacres in the profession, I am sorry to say, and yet you wonder why the conventions are not more largely attended.

We are afraid to go, for fear that our learned brethren, who have graduated with lower standings may, upon our appearance, investigate our hair for specimens of timothy seed.

Brother practitioners, I am one of those whom you consider benighted dentists. I practice in a small town of six hundred inhabitants.

You have ideas which would benefit us, and beneath our poor, seed-burdened thatches, probably there are some ideas that might help you.

We constitute a large portion of the dentists of the United States, and I repeat, are graduates of as good colleges as are you. In spite of the learned dentist whose spiteful bray struck at my esteemed competitor I am going to enclose the histories of what, to a seed-burdened dentist, seem to be very interesting and puzzling cases:

January 11, 1904. Mr. O. —, a clerk, aged twenty-three, came to my office to have a pulp removed from an upper right first molar. The pulp had been devitalized by arsenic about forty-eight hours. I removed the temporary filling, and had removed the lingual portion of the pulp, when I noticed a slight paleness in the young man's face, but he declared he had felt nothing, and was all O. K. Upon this assurance I started to clean out the disto-buccal root and met with resistance from the patient and the angry inquiry, "What are you doing up there? You make me sick." The blood was entirely out of his face now, and I decided to place a treatment and dismiss the case for a time. I turned to my medicine case and heard my patient utter a peculiar sound. I turned around and found him doubled up, his knees drawn toward his breast, and his head down toward his back. The eyes were rolled upward and the pupil was very much enlarged. There was absolutely no color in his face I picked him up and placed him flat on his back on a couch and

sent my assistant for medical aid. When I undertook to loosen his collar, vest, etc., I was met with a determined resistance in which the young man tried to choke me. Upon the arrival of medical aid I succeeded in bringing him to understand where he was, and what had happened. The patient explained that he had been dreaming that he was being wakened out of a deep sleep, and didn't want to wake up. My friend, the physician, thought cocaine was the cause of the trouble, but upon learning of my treatment, treated the case as a slight faint, induced by cerebral anæmia.

Tuesday evening, January 12.—The patient was examined by the physician who attended him in my office the day before. His pulse, after sitting still for about five minutes, was ninety-six, but upon the application of the stethoscope to his heart, the rate of heart beat dropped to forty-six in less than five seconds, and the same symptoms manifested themselves as in the office the day before.

The patient would recover on the removal of the stethoscope and would resume the symptoms upon its application.

The patient says that he suffered no pain, either in my office or in that of the physician.

He is a young man of regular habits, and uses no stimulants of any sort.

Since the above I have filled the lower right first molar, giving a slight amount of pain, but am unable to do more than two or three minutes' work upon the upper tooth without producing a return of the former condition.

There is one case of insanity in his mother's family. This is the only family history that I can give.

February 3, 1904.—Case two presented itself to me, the patient this time a young lady of thirteen years of age.

Her mother brought her to me to have a lower left first molar filled. The cavity was not large and I succeeded in removing the decay without pain, but noticed a decided pallor. Was just bringing the burr into use for completing the cavity when the same condition as in No. 1 manifested itself. I dropped the hand-piece and revived the patient, when her father came in and spoke to her. After a few minutes I finished the cavity while the father stood by her. While mixing the amalgam the father went out leaving the the mother in charge of the little

one. The writer endeavored to place the filling, but was met again with the same symptoms and until the return of the father the filling could not be placed, nor could it be placed while the mother was in the operating-room.

These people in both cases are not afraid of me and both declare that I gave them no pain.

If it isn't asking too much, a poor, benighted country graduate of one of the best colleges of the United States would like to hear a few comments on these cases. Remember, these patients, like myself, run chances of carrying samples of timothy, clover, oats, wheat, etc., in their hair.

Yours for comments,

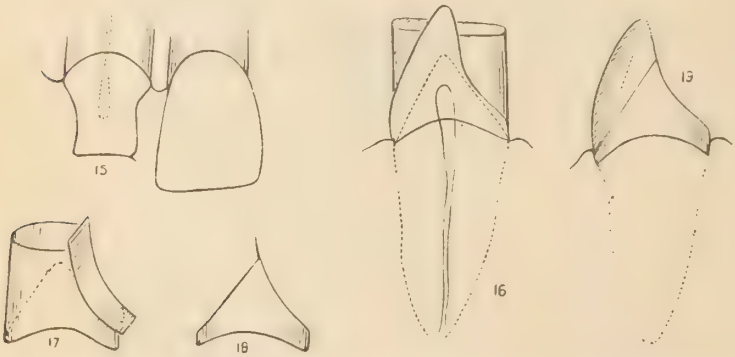
Argyle, Wis. G. T. RICHARDS.

SUGGESTIONS

THE JACKET CROWN.

J. F. Ross, Toronto, Can.

If the tooth to be crowned contains a cavity, it must be properly excavated and filled with cement or amalgam. Reduce the length of the crown of the tooth by about one-third, then with thin carborundum discs, trim off about one-quarter of the width on each of the mesial and distal surfaces, thus leaving the tooth about one-half its original width, at the same time removing the enamel at the cervical circumference as perfectly as possible. Then reduce the labial surface sufficiently to accommodate a fair amount of porcelain bodly, with which to attain a thin porcelain veneer. Remove enough of the lingual portion to allow the thickness of the platinum of which the jacket is made, providing the occlusion demands it. (Fig. 15).



To the prepared tooth fit a straight tube of platinum about 32 B. and S. gauge (Fig. 16). Slightly compress this tube mesio-distally, after which cut out the lingual portion from the cervical margin. Solder to tube as it now appears, a new lingual part of iridio-platinum about 32 gauge (Fig. 17). The next procedure is

to grind down, on a lathe corundum wheel, the labial surface of the tube, and by exercising care and little pressure, a thin film of platinum will remain, which will prevent the porcelain subsequently added from entering the interior of the jacket (Fig. 18). The platinum, which now remains projecting beyond the incisal edge of the stub, is then cut into several slits, which are folded over irregularly on the labial surface, and this affords the best possible attachment for the porcelain body. The platinum jacket being now completed, a layer of porcelain is placed on its labial surface, and biscuited in the furnace. After cooling, it is placed back on the tooth to its proper position, more body is added, and the facing or veneer adjusted, noting proper relation to the other teeth. Surplus moisture is then dried out with blotting paper or cotton napkin, and the whole removed carefully from the tooth. Place more body when required, and fuse again. The metal parts must then be polished, and the crown is complete (Fig. 19).—*Dominion Journal.*

PORCELAIN INLAY WEDGE.

J. M. Thompson, Detroit.

The soft wood of matches is preferable to orange wood in wedging inlays into place, as the latter is more liable to exert too much force upon the frail edges of the filling.—*Extract American Journal.*

BEST METHOD OF MAKING A VACUUM CHAMBER.

A. Osgood, Bath, N. Y.

I will briefly describe what I believe to be the best method of making a vacuum chamber. For the form I use a metal composed of equal parts of lead and pure tin. This is rolled in sheets of Nos. 26, 28, and 30 gauge. These three thicknesses are all that is required. Always cut a new form for each case. It should never reach nearer than a quarter of an inch to the heel or back edge of the plate. It should extend forward sufficiently to prevent rocking on the hard part of the palate. It should have no square edges, but with a fine file should be nicely beveled. It should be broad enough to cover the horizontal portion of the hard palate. Do not give it a heart or any other fancy shape, but let it conform to the general form of the arch of the mouth. After

the metal form is pressed down smoothly and fastened to the model in the position desired, on either side of the hard part of the palate, scrape a little plaster from the model, extending this slight change a little farther in the rear than the plate will reach, so there will be a snug pressure in the soft tissue at those points when the finished denture is placed in the mouth.

A good many dentures made with the air chamber in the manner I have outlined have been worn, to my knowledge, for from twenty to thirty years—although some of them were intended as temporary plates—and all of them free from any morbid condition, so far as I have seen, and have "held up" to the satisfaction of all concerned.

Like others, I have had failures in my fits, but to overcome them have never resorted to the deep vacuum chamber.—*Extract Cosmos.*

PORCELAIN CUSPS AND SHRINKAGE.

D. Genese, Baltimore, Md.

One feature has been overlooked in discussing cusp carving; that is, shrinkage. When we take into consideration the fact that even the highest grade porcelain will shrink one-fifth more than the low-fusing one, this is a very important feature. My method has been to make a fold of plaster somewhat larger than I want the tooth to be, pressing the material in well, and when this is dry open the halves of the plaster; one then has the porcelain more easily formed than by carving, and more accurate, at the same time allowing for shrinkage—*Cosmos.*

A SIMPLE METHOD FOR GETTING A PERFECT MATRIX.

W. Holloway, Philadelphia, Pa.

To get a perfect matrix for a porcelain inlay by the use of the materials (spunk and chamois disks) recommended by the Jenkins system or by the use of burnishers or both combined, I have found tedious, with a loss of much time and often uncertain, if not failures. Believing that a better method could be found, I began experimenting with different materials and now believe that I have found one with which a perfect matrix can be easily and quickly obtained, provided of course, that the cavity is properly prepared. After preparing the cavity in the usual way, pre-

ferably with the rubber dam in place, cut the gold of usual size and shape, place it over the cavity and with the finger gently press it to conform to the tooth and show an outline of the cavity. Next take a strip of thin dam (usually about five-eighths by two inches in size) and place it so as to entirely cover the gold, drawing it just sufficiently to hold the gold in place. Everything is now ready for the material which I have found so efficient and which is ordinary putty, such as glaziers use. Take a quantity that would about twice fill the cavity, roll it between the thumb and finger into a ball; then place it on the dam directly over the cavity and press with the thumb or finger, gently at first, then firmly, or push it with the dam and gold before it into the cavity.

As pressure is released the rubber withdraws the putty from the cavity and both can be thrown aside. If this plan is carefully followed, the operator will now find that the gold conforms perfectly with the outlines and walls of the cavity and the matrix is ready for removal from the tooth. The putty should be stiff and when the thumb or finger cannot be conveniently used to press it into the matrix, a cement spatula may be used. Putty, if kept in an air-tight jar, will not harden and a few cents' worth will be sufficient for the work of several months.

I have never tried this method with platinum foil, but believe that it would be no less serviceable than when gold is used.—*Extract Items.*

REPAIRING FRACTURED CASTS.

S. M. Weeks.

A valuable method of repairing fractured plaster casts may be found in the use of celluloid dissolved in camphor and ether to a creamy consistence. A good quality of celluloid should be selected, and to it should be added a mixture of equal parts of ether and spirits of camphor. This combination dissolves celluloid rapidly, and should be added to the material until a solution of a cream consistence is obtained. The preparation should be kept tightly corked to avoid its evaporation.

When it becomes desirable to repair broken casts, the fragments to be attached should be well dried and both surfaces should be freed from boken particles. The surfaces should be coated with the celluloid solution, and after being pressed firmly, should be allowed to dry.

This method the writer has found to possess many advantages over the common practice of attaching the fragments by means of resinous products. The line of union is impervious to moisture, and plaster casts thus repaired have been found to resist the stress of flasking, boiling, packing and pressing in the process of vulcanizing.—*Cosmos.*

TO REPAIR A HOLE IN A BRIDGE.

A. W. Thornton, Chatham, Can.

When a "flaw" occurs in soldering a bridge, due to a minute particle of flux, clean out the depression with an inverted cone bur and fill with Watt's or Vernon's crystal gold.—*Review.*

SWAGE FOR CROWN CAP.

J. Mills, Brantford, Can.

Place a ferrule on the end of a piece of pine wood of proper size and use as a counter-die. After using a few times the ferrule can be forced up on the stick and the used part cut off.—*Review.*

METHOD OF TIPPING BRIDGE TEETH.

F. S. Miller, Warsaw, Wis.

Prepare the tooth by grinding as is ordinarily done and burnish pure gold backing to position on the tooth, allowing the backing to project beyond the labial or buccal surface of the facing at the occlusal end. Hold the occlusal end of the tooth, with backing in position, against a flat surface having a right angle corner, such as a drawer in the bracket table, the labial surface of the facing being held even with the upper surface of the drawer. The projecting gold can now be turned down till it rests on the upper flat surface. Burnish the gold well against the facing and contour the tip if necessary. The case is now invested and 22k. plate is flowed over occlusal surface and tip as heavy as desired. After the crown is soldered grind away the gold that overlaps the edge in front, and this will produce a solid 22k. tip. The same method can be adopted for bicuspids and molars in bridge-work. Flow 22k. plate over the whole surface of the backing, making it heavy enough to protect the facing. Make lingual cusps, articulate and attach with solder.—*Review.*

A HINT ON IMPRESSION TAKING.

Doctor Gaylord.

Where impressions are taken of mouths having a high arch, I have found it very helpful to insert a little plaster with a spatula before placing in the cup. It avoids the necessity for using a large bulk of plaster in the cup and simplifies the operation. In partial lowers, also, this same plan works admirably. But no matter what the case may be, if an accurate impression is desired plaster is by far the best material.—*Brief.*

TO MAKE IMPRESSION TAKING MORE AGREEABLE TO PATIENTS.

If, before mixing the plaster for impressions, one will add a little sanitol to the water, giving it the flavor of peppermint, it will make the taking of impressions more agreeable to patients.

CARE IN TAKING LOWER IMPRESSIONS.

J. F. Wessels, Philadelphia.

When taking an impression of the lower jaw, in either wax or modelling compound, it is necessary that the cheek on each side be pulled out by inserting the finger along the buccal side of the impression tray so as to lift out the fold of the muscles that may have been caught under the edge of the tray and material. The patient should also be instructed to raise the tongue from the floor of the mouth and extend it, so as to prevent the impression from impinging upon the muscles beneath the tongue.—*Brief.*

CONVENIENT METHOD OF MOUNTING DISKS.

R. M. Pearce, Rock Island, Ill.

Two disks mounted on the mandrel with the smooth surfaces in contact, will in many cases be found to work nicely where two surfaces of a disk can be used to advantage.—*Review.*

HOW TO PROTECT THE MOUTH-MIRROR.

Place a moistened microscopic glass upon the mouth-mirror. If the stone should mar it, it can easily be replaced, thus saving your mouth-mirror many a scratch.

TAPERED FINISHING STRIPS.

C. R. Taylor, Streator, Ill.

Have your finishing strips made tapering, viz., broader at one end than at the other. Prepared in this way they will not engage the rubber dam so readily when finishing cervical margins of gold fillings. If the cavity extends far under the gum pull the strip through from the small end.—*Review*

FINGER-HOLD FOR BROACHES.

J. C. Montgomery, Selma, Ala.

Ordinary Donaldson broaches may be changed to handy broaches for molars by cutting off half the stem or handle and dropping two or three drops of ordinary sticky wax on the end to form a globule or finger-hold.

ADVICE.

L. P. Haskell, Chicago.

My advice has been asked in regard to mode of procedure in the following cases:

Case I. One tooth, central incisor, remaining. Had tried several plates without success. The tooth is not only useless, but worse than useless, as it interferes with successful denture.

In the matter of retaining natural teeth there is just this to be said. The patient has reached the condition of need of artificial teeth, and the only question is what shall be done to make the denture useful and comfortable. If the extraction of the remaining teeth will insure this, do not hesitate to extract.

Case II. All the teeth remaining on one-half of the upper jaw except the roots of first molar crowned. This is a difficult class of cases, as there is nothing to counterbalance closure on the artificial teeth.

Remove the crown from the molar; place a clasp on the bicuspid and tooth on the plate when the molar is missing. A gold plate, with nicely fitting clasp, adjusted by the mouth, and not to a plaster model, is preferable. It will be an advantage to make use of a vacuum cavity also, only be sure the clasp is so fitted as not to interfere with plate in a proper bearing over the palate, thus interfering with the suction.

DISPLAY OF GOLD NOT ARTISTIC.

J. T. Grant, Woodland, Cal.

Every artistic prosthetician knows that a durable banded crown may be constructed, having little or no gold in evidence. Unless this fact be observed and adhered to the banded crown would best be known as the "abandoned" crown, for it certainly is an abomination in the eyes of the discerning.—*Gazette.*

FREE ACCESS TO THE POINT TO BE SOLDERED.

H. M. Kirk, Los Angeles, Cal.

After investing, this is first in order of importance. An exposed surface to operate upon,—access,—is most essential. Endeavoring to solder successfully, "down in a hole," or into deep crevices, is quite impossible, and a very dangerous proceeding. Rather have access free and unobstructed, and court success from the outset. There is no necessity for an extra large investment, neither for overhanging portions of investing material. In every instance it is wise to trim off superfluous material, until *direct access* to the very point to be soldered be obtained. A wall around the point to be soldered prevents the entrance of the blowpipe flame, and a consequent rebound, producing an exceeding and unnecessary heat at the point of rebound, thus endangering the case.—*Gazette.*

OXYSULPHATE OF ZINC AS A CAPPING MATERIAL.

W. D. Miller, Berlin, Germany.

As capping material everything should be rejected which does not adapt itself perfectly to the surface of the pulp without the use of the least pressure. I invariably use oxysulphate of zinc, mixing it to a thin paste. With an instrument with which I can easily reach the surface of the pulp I take up a quantity the size of a large pin-head and bring the paste, not the instrument, into contact with the surface of the pulp, when if it is of the proper consistency it will flow off the point of the instrument and spread out over the exposure.

If it is deemed desirable a small quantity of finely pulverized thymol may be mixed with the cement in order to secure a slight permanent antiseptic action.

APPLYING THE RUBBER BAND OVER DEEP CERVICAL CAVITIES.

N. L. Burke, Benton Harbor, Mich.

Clean the cavity thoroughly, mix some quick-setting cement and fill, covering all margins. Anæsthetize the gum by use of the hypodermic syringe and by the time this is accomplished the cement is hard. The rubber dam can now be applied and the case with which the clamp can be adjusted will compensate the operator for the time required in placing the cement. This method really saves time for the operator and renders the operation comparatively painless for the patient. After the rubber dam is adjusted the cement can be easily removed.—*Review.*

EXTRACTING INCISORS OR CUSPIDS.

S. Moyer, Galt, Ont.

To remove incisors or cuspids with little exertion and a minimum amount of pain, rotate with lower root forceps.—*Review.*

ZINC DIES.

M. G. McElhinney, Ottawa, Can.

To save time in making small zinc dies for special purposes the model can be partly contoured with wax, covered with tinfoil, and the mold made immediately.—*Review.*

TAKING SMALL IMPRESSIONS IN MODELING COMPOUND.

F. W. Stephan, Chicago.

Small impressions, i. e., impressions covering a small area, may be easily and accurately obtained by first taking an approximate impression in dento, perfection or similar compound, cooling it thoroughly and using this as a tray to carry a sufficient amount of freshly softened compound to place. The results of this method are highly satisfactory, giving a perfect and sharply defined impression.

To work this material it may be softened in an alcohol or Bunsen flame, holding it by an unsoftened end, and when quite hot dipped for a moment in cold water. This barely chills the surface and it can be readily worked with moistened fingers.—*Review.*

SOCIETY

INTERNATIONAL DENTAL CONGRESS.

COMMITTEE ON THE PROMOTION OF APPOINTMENT OF DENTAL SURGEONS TO THE ARMIES AND NAVIES OF THE WORLD.

Chairman, Dr. Williams Donnally, 1018 14th Street, Northwest, Washington, D. C., U. S. A.

Associate Chairman, Dr. Gordon White, 610 Church Street, Nashville, Tenn., U. S. A.

Secretary, Dr. A. J. Brown, 1326 L Street, Washington, D. C., U. S. A.

COMMITTEE MEMEBERS IN THE UNITED STATES.

Dr. George S. Vann, Gadsden, Ala.; Dr. Rivers A. Rush, Mobile, Ala.; Dr. George Eubanks, Birmingham, Ala.; Dr. J. S. Stillwell, Searcy, Ark.; Dr. Leander Van Orden, San Francisco, Cal.; Dr. Garret Newkirk, Los Angeles, Cal.; Dr. James McManus, Hartford, Conn.; Dr. Edward S. Gaylord, New Haven, Conn.; Dr. M. F. Finley, Washington, D. C.; Dr. Robert W. Talbot, Washington, D. C.; Dr. William G. Mason, Tampa, Fla.; Dr. H. H. Johnson, Macon, Ga.; Dr Thos. Hinman, Atlanta, Ga.; Dr. George B. Perry, Chicago, Ill.; Dr. Thomas L. Gilmore, Chicago, Ill.; Dr. L. S. Tenney, Chicago, Ill.; Dr. M. A. Mason, Fort Wayne, Ind.; Dr. Wm. S. Hosford, Iowa City, Iowa; Dr. R. S. Bandy, Tipton, Iowa; Dr. H. B. Tileston, Louisville, Ky.; Dr. L. C. Wasson, Topeka, Kan.; Dr. R. J. Renz, Leavenworth; Dr. Jules J. Sarrazen, New Orleans, La.; Dr. E. J. Roberts, Augusta, Maine; Dr. Richard Grady, Annapolis, Md.; Dr. Eugene H. Smith, Boston, Mass.; Dr. G. E. Mitchell, Haverhill, Mass.; Dr. N. S. Hoff, Ann Arbor, Mich.; Dr. L. C. Moore, Detroit, Mich.; Dr. Wm. A. Dickinson, Minneapolis, Minn.; Dr. R. H. Mace, St. Louis, Mo.; Dr. Samuel Williams, St. Louis, Mo.; Dr. George A. Young, Concord, N. H.; Dr. Harvey Iredell, New Brunswick, N. J.; Dr. H. L. Sutphen, Newark, N. J.; Dr. J. E. Duffield, Camden, N. J.; Dr. E. A. Bogue, New York, N. Y.; Dr. Wm. Jarvie, Brooklyn, N. Y.; Dr. A. L. Northrop, New York, N. Y.; Dr. V. E. Turner, Raleigh, N. C.; Dr. E. J. Tucker, Roxboro, N. C.; Dr. L. P. Bethel, Columbus, Ohio; Dr. George H. Wilson, Cleveland, Ohio; Dr. L. P. Dotterer, Charleston, S. C.; Dr. Thomas T. Moore, Columbia, S. C.; Dr. George H. Chance, Portland, Ore.; Dr. H. E. Roberts, Philadelphia, Pa.; Dr. S. H. Guilford, Philadelphia, Pa.; Dr. Clarence A.

Carr, Newport, R. I.; Dr. C. A. Brackett, Newport, R. I.; Dr. R. R. Freeman, Nashville, Tenn; Dr. S. B. Cook, Chattanooga, Tenn.; Dr. Joseph L. Newborn, Memphis, Tenn.; Dr. M. S. Merchant, Giddings, Texas; Dr. W. R. Clifton, Waco, Texas; Dr. S. Dwight Hodge, Burlington, Vt.; Dr. D. N. Rust, Washington, D. C.; Dr. H. H. Harrison, Wheeling, W. Va.; Dr. John H. Hess, U. S. A., Dental Surgeon; Dr. W. H. Ware, U. S. A., Dental Surgeon; Dr. Louis Ottofy, Manila, P. I.

Since the importance of the subject entrusted to the above named committee has been very fully appreciated in the United States for the past five years, especially by most of those who make up the accompanying list of American members, it seems necessary to more than call your attention to the broader scope of the work involved in an attempt to extend the benefit of an educated and efficient dental service to the armies and navies of the world.

You are invited to contribute papers on the subject and to suggest to the Chairman matter for the report which will be presented through the full committee to the Fourth International Dental Congress at St. Louis. Please notify the Chairman at once what your contribution will be entitled.

It is a matter of regret that the personnel of the Foreign Committee cannot now be announced, but is hoped there will yet be such affiliation and co-operative effect as will insure more consideration of the cause we represent by the military and naval authorities of the greater countries of the world Happily for Americans, the army's and navy's need of the service of dental surgeons is everywhere conceded and only the question of their official status and of the number required remain undetermined. The unsupplied requisitions of Army Department Commanders and Post Surgeons for the service of more dental surgeons not only proves the present corps inadequate, but it proves the value of the service more convincingly than the often heard informal expressions of appreciation by army men. Two years ago the Surgeon-General recommended an increase and commissioned rank of permanent tenure. The present Surgeon-General has only recently encouraged the committee of the National Dental Association to expect his official endorsement of our contention for commissioned rank for Military Dental Surgeons. The attitude of a majority of the Senate and House Military Committees has always been favorable to the profession's contention for commissioned rank.

The different conditions obtaining in the navy, together with the experience in its effort to secure the carrying out of a policy leading to commissioned rank, which policy was adopted before the law providing for the Army Dental Corps was enacted, has warranted the National Dental Association Committee in consistently contending for a status from the start that would insure to the navy dental surgeon the professional, social, and official advantages which belong only to commissioned officers.

Friends of the profession in Congress could be depended upon to see that proposed measures providing less than rank should not be adopted, but there was no assurance that rank would be provided until the Navy Department assented thereto. Finally, the Navy Department recommended,

in a letter dated March 2, 1904, the appointment by the President of thirty dental surgeons, with rank and pay of Acting Assistant Surgeons and the status of Assistant Surgeons. Assistant Surgeons have a permanent tenure; Acting Assistant Surgeons are removable at the pleasure of the President. This proposal of the Navy Department has been accepted and recommended to the Naval Committees by the authorized representatives of the dental profession. Its enactment is confidently expected by the Congress next winter.

WMS. DONNALLY, *Chairman*,
1018 14th Street, Washington, D. C.
GORDON WHITE, *Asso. Chairman*,
610 Church Street, Nashville, Tenn.
A. J. BROWN, *Secretary*,
1326 L Street, Washington, D. C.

FOURTH INTERNATIONAL DENTAL CONGRESS.

GENERAL INFORMATION.

MEMBERSHIP IN THE CONGRESS.

The following are the rules governing membership in the Fourth International Dental Congress, submitted by the Committee on Membership and approved by the Committee of Organization:

I. All reputable practitioners of dental and oral surgery who are entitled to membership in representative state, district, or local dental associations where they reside are eligible for membership in the Congress.

II. The state conference committees in America, and the national chairman of each foreign country have authority to receipt for the membership fee, which, with the application for membership, shall be forwarded to the chairman of the Finance Committee, Dr. C. S. Butler, 680 Main street, Buffalo, N. Y., who will thereupon forward the official credentials conferring membership in the Congress.

III. If any difference of opinion arises in state committees or national committees as to the eligibility of an applicant for membership, the question shall be referred to the Committee on Membership of the Congress.

IV. The wives and children of the members of the Congress may be admitted upon special request and by consent of the Committee on Membership.

V. A uniform fee of ten dollars shall be paid for each membership, and each person whose name appears on the program either as essayist or clinician must be a paid member of the Congress.

J. D. PATTERSON,
Chairman Committee on Membership,
Kansas City, Mo., U. S. A.

Membership in the Congress will entitle the holder to all the privileges of debate and discussion of papers, and the right to vote upon all questions which the Congress will be called upon to decide. It will also entitle the members to participate in all the social functions of the Congress under the same conditions as enjoyed by others; to the official badges and insignia of the Congress; to one copy of the complete volumes of the transactions, which it is anticipated will comprise not less than four volumes of about five hundred pages each. Judging from the material already offered, it is believed that the transactions of the Congress will be the most complete exposition of modern dentistry yet published. This work will be sent to every member, whether he is able to be present at the Congress or not.

In order to avoid confusion and crowding of work at the last minute, those intending to apply for membership in the Congress are urged to send in their applications at once, which will give time to correct any error should one by chance occur.

All communications of a scientific nature must be submitted to the Committee on Essays for approval before final acceptance for a place upon the program. All communications to the literary program of the Congress from foreign countries must receive the approval of the national committee of the respective countries from which they are sent before they can be accepted by the Committee on Essays of the Congress. Each essay must be accompanied by a resume giving the substance of the communication in an epitomized form, which must be in the hands of the Essay Committee thirty days before the opening of the Congress, in order to give opportunity for translation and printing in advance of the Congress, and in order to secure a position upon the official program. All essays, titles of essays, and resumes thereof should be forwarded to Dr. Wilbur F. Litch, 1500 Locust street, Philadelphia, Pa., U. S. A., or to the secretary of the Committee of Organization.

CLINICS.

All who intend to give clinical demonstrations should communicate with Dr. J. P. Gray, 212 N. Spruce street, Nashville, Tenn., U. S. A., chairman of the Committee on Clinics, who will make the necessary arrangements and supply suitable patients as far as may be possible. The rules governing the approval of literary communications by the several national committees will govern also the clinical demonstrations, and all arrangements for clinical demonstrations must be completed by August 1st in order to secure space and a place upon the program.

EXHIBITS.

All exhibits of a technical character relating to dentistry will be arranged for by the chairman of the Committee on Exhibits, Dr. D. M. Gallie, 100 State street, Chicago, Ill., U. S. A., to whom all applications should be made for space. All exhibits relating to dental education will

be provided for upon application to Dr. Truman W. Brophy, Marshall Field Building, Chicago, Ill., U. S. A., chairman of Section IX—Education, Nomenclature, Literature and History.

PRIZES.

The Committee of Oganization offers two prizes, viz, a handsome gold medal for the best essay on any subject pertaining to dentistry, and a similar medal for the best exhibit of an archæological character illustrating the development of dental art. All essays in competition for the gold medal prize are to be forwarded to Dr. James Truman, 4505 Chester avenue, Philadelphia, Pa., U. S. A., chairman of the Committee on Prize Essays, without the name of the author attached, and designated by a motto, accompanied by a sealed envelope containing the name of the author and bearing upon its outside a duplicate of the motto upon the essay. The committee after having decided upon the respective merits of the essays and after having selected that one deemed worthy of the medal, will open the envelope bearing the duplicate motto and announce the name of the successful author. The other communications will be destroyed *incognito* six months after the Congress closes unless return of the unsuccessful essays be requested by the authors thereof within that period; or, at the option of the writers, the competing essays which fail to secure the medal may be referred to the Essay Committee for presentation before the Congress. The successful prize essay will be published as a part of the proceedings of the Congress.

The awarding of the prize for the archæological exhibit will be made by a committee to be appointed specially for that purpose. All exhibits competing for this medal will be cared for by the chairman of the Committee on Exhibits, Dr. D. M. Gallie, 100 State street, Chicago, Ill., U. S. A.

PRESENT STATE OF ORGANIZATION.

The chairman of the Committee of Organization through Senator Depew has secured from Secretary of State the Hon. John Hay a promise to send through our foreign ambassadors and representatives an invitation on behalf of our government to all governments with which the United States is in diplomatic relation to send an official delegate to the Congress, and the Secretary has received notification that these invitations have been issued.

Upward of twenty nations have signified their intention to take part in this great Congress. No fewer than fifteen hundred committeemen are now actively at work promoting the success of the meeting. Every state and territory in the United States is in charge of a state committee actively at work in developing the details of the Congress in a local way. So that the prospect of an unusually large attendance is practically assured, and it is confidently expected that the membership in the Fourth International Dental Congress will be much in excess of any other dental meeting ever held. The number and character of essays already prepared, the number and character of the clinical demonstrations, the magnitude of the ex

hibits already arranged for, will surpass in these features all previous dental meetings. The work which has been accomplished by the Committee on Education, Legislation and Dental History will constitute the most extensive contributions to these departments yet made.

The social features of the Congress are being provided for upon an elaborate plan. Receptions, luncheons, and various forms of entertainment are being arranged on a scale commensurate with the magnitude and importance of the meeting, and as much time will be given to the amenities of social intercourse as may be consistent with the more serious features of the program.

The Fourth International Dental Congress is now an assured success, and, judged from any standpoint, it will be a meeting which will not only adequately set forth the most recent developments of dental science and art, but it will constitute a liberal education in dentistry which no progressive practitioner can afford to miss.

An efficient corps of interpreters has been provided to assist those visiting members who are unfamiliar with the English language.

EDWARD C. KIRK,
Secretary Committee of Organization.

WISCONSIN STATE DENTAL SOCIETY.

The thirty-fourth annual meeting of the Wisconsin State Dental Society will be held in Manitowoc, July 19-21, 1904. A cordial invitation is extended to all ethical practitioners to meet with us.

A. G. FEE, *President.*

W. H. MUELLER, *Secretary,* Madison, Wis.

OHIO DENTISTS TAKE NOTICE.

Your attention is called to the Fourth International Dental Congress, to be held in St. Louis, August 29th to September 3d of this year, and you are now asked to become a member by filling out the blank sent you and sending it, with the amount of the membership fee of $10, to Dr. Henry Barnes, State Chairman for Ohio, who will at once forward receipt for same. You will then, in due course, receive from Dr. C. S. Butler, Buffalo, Chairman of the Finance Committee, a membership certificate in regular form. The membership will entitle you to all the privileges of the floor, and to vote upon all questions which the Congress will be called upon to decide. It will also entitle you to participate in all the social functions under the same conditions as enjoyed by others; to a recognition button, which is a work of art, and worthy to be kept as a souvenir; also to the complete volumes of the proceedings, which, judging from the material already presented, will be the most complete exposition of modern

dentistry yet published, embracing all branches of professional activity. This work will be fully worth the membership fee, and should be in the hands of every dentist. It will be sent to every member, whether he is able to be present at the Congress or not.

To avoid the confusion and crowding of work at the last moment, you are urged to send your application at once. This will also give time to correct any error, should one by chance occur.

Nearly all the foreign countries are organized. National committees in the several countries are actively promoting the work of the Congress abroad, and there will be a large foreign contingent in attendance. For the honor of the United States, and the glory of her dentists, let us make their visit a memorial one.

The Local Committee of Arrangements will provide for the accommodation and entertainment of members, and a Ladies' Committee will give especial attention to the wives of those attending the Congress.

Every ethical practitioner is eligible to membership, whether he be a member of a state or local society or not. The application of any one who is not a member of any society must be accompanied by the endorsement of a society member, stating that the applicant is an ethical practitioner.

Send in your application now.

HENRY BARNES,
State Chairman for Ohio,
1415 New England Building, Cleveland, Ohio.

RESOLUTION ON THE DEATH OF DR. L. P. WILSON.

The following was adpoted by the Iowa State Dental Society:

WHEREAS, Since the last meeting of this society, death removed from us on the 9th day of March, 1904, one of our most honored and esteemed members, Dr. I. P. Wilson, of Burlington, we, as members of this society, wish to give this expression as to his worth and character, and to the esteem in which he was held by this society and the profession of the state.

Doctor Wilson was an Iowa dentist, having come to the State from Ohio when about fifteen years of age, studied dentistry with Doctor Tullus, of Iowa City, and later graduated from the Missouri Dental College. He spent the whole of his professional life in Iowa, the greater part of which was in Burlington. For forty-one years he was a member of this society, being prominently connected with its early history.

Doctor Wilson was devoted to his profession, never being satisfied with present attainments, but constantly pressing forward, keeping abreast with the advance made by the profession. He always regarded this society as indispensable to his advancement.

As an instructor in the Dental Department, S. U. I., and later in the

Keokuk Dental College, he endeared himself to the hearts of the students. He was pre-eminently the friend of the young men of the profession, and his influence was that of an honest, upright, professional Christian gentleman. Therefore, be it

Resolved, That this society hereby testify to the loss we experience in the death of Doctor Wilson, and extend our sincere sympathy to Mrs. Wilson and the family in their bereavement; that these resolutions be spread upon the records of this society; that a copy be sent to Mrs. Wilson and the family; also the dental journals for publication.

J. B. Monfort,
A. W. Dana,
Anna H. Joy,
Committee.

COMMENCEMENTS.

Philadelphia Dental College, May 6th—graduates, 100.
Ohio College of Dental Surgery, May 5th—graduates, 71.
Cincinnati College of Dental Surgery, May 5th—graduates, 18.
Keokuk College of Dentistry, April 19th—graduates, 17.
Colorado College of Dental Surgery—graduates, 20.
McLarry Medical College, Dental Department—graduates, 9.
Southern Dental College—graduates, 32.
Omaha Dental College—graduates, 22.
Washington University Dental Department—graduates, 43.
North Pacific Dental College—graduates, 19.
Royal College, Ontario—graduates, 54.
Baltimore Medical College, Dental Department—graduates, 24.
Baltimore College of Dental Surgery—graduates, 68.

AFTERMATH

PERSONAL AND MISCELLANY.

Dead.—Dr. W. W. Dean, Lacon, Ill., died May 14th, aged 69 years.

Dentist Wanted.—According to reports, a dentist is wanted at Liege, Belgium.

Dead.—Dr. W. F. Klock, Syracuse, N. Y., dentist, died of heart disease May 1st, aged 49 years.

Dental Office Burned.—The dental office of Doctor Sutton, Chariton, Iowa, was burned May 11th.

Loss by Theft.—Dr. S. B. Johnston, Newark, N. J., lost $15 in gold materials by theft, May 12th.

Bankrupt.—Dr. John A. Brooks, Erie, Pa., filed a petition in voluntary bankruptcy. Liabilities, $2,257.

Married.—Dr. E. R. Austin, Monticello, Ind., was married, May 18th, to Miss Mary O'Dell, of Jones, Mich.

Mexican Dentist Dead.—Dr. R. M. Ramos, a prominent Mexican dentist, died of consumption in Guadalajara, Mex., May 5th.

Appointed Secretary.—Dr. E. D. Brower, Le Mars, Iowa, has been appointed Secretary of the Iowa State Board of Dental Examiners.

Where Dentists Are Few.—It is said that in Buenos Aires, S. A., a city of over one million inhabitants, there are only fifty practicing dentists.

Passed the Board.—Out of a class of eighteen, there were fourteen successful candidates who took the examination of the Missouri Board, May 13th.

Found Guilty of Counterfeiting.—Doctor McGill, Avalon, Pa., has been convicted for making and passing counterfeit money. A new trial is asked for.

Change of Location.—Dr. C. E. Rowe, Nokomis, Ill., succeeds Dr. C. L. Cleveland in dental practice at Redhouse, Ill. Doctor Cleveland will locate in Peoria.

Failed to Pass.—Out of a class of fifty-four that presented for examination before the Mississippi State Examining Board May 20th, twelve failed to pass.

Cheap Living.—A Zion City dentist, a follower of Dowie, says that he and his wife live on $1.68 a week. It is evident that he does not own an automobile.

Only Two-fifths Were Successful.—Out of a class of fifty candidates for license, only twenty were passed by the Michigan Dental Board at its recent meeting.

Nothing Slow About This Dentist.—Dr. L. S. Effron, Philadelphia, was granted a divorce from his wife on Monday, May 2nd, and married another woman Wednesday, May 4th.

Dental Office Theft.—The office of Doctor Hawkins, Youngstown, Ohio, was entered by thieves sometime during the day of May 18th, who got away with about $50 worth of supplies.

List of Registered Dentists.—Ohio Board of Dental Examiners are preparing a list of registered dentists in the State. The Arkansas State Dental Society are to publish a list of registered dentists in that State.

Killed.—Ivan Evans, son of Dr. John Evans and grandson of the famous Thomas W. Evans, was shot and killed in France, May 25th. It is not known whether it was suicide or whether he was shot by another person.

Protective Association.—The dentists of the State of Iowa took measures at their meeting to form a protective association for defense in cases of suits for blackmail and to escape a certain class of alleged grafters that have preyed on the practioners for the past years.

Dental Board Appointments.—The Governor has appointed as members of the Iowa State Dental Board, W. H. DeFord, of Jefferson, and F. H. Rule, of Ackley, to succeed Doctor James, of Fairfield, term expired, and Doctor Searles, who resigned to go to Chicago.

Iowa State Dental Society.—The Iowa State Dental Association elected Dr. J. V. Conzett, of Dubuque, as president of the association for the coming year; Dr. J. B. Pherrin, Central City, vice-president; Dr. C. W. Bruner, Toledo, secretary, and Mae E. Reynolds, Osceola, treasurer.

Doctor Jay Honored.—At the opening session of the Eastern Indiana Dental Association, May 4th, souvenir buttons were presented to all visitors. They bore the picture of Dr. J. W. Jay, of Richmond, the oldest practicing dentist in Indiana. He is nearly 80 years old. Dr. Jay made an address.

Will Take Half-holiday Saturdays.—The dentists of Columbus, Ohio, will close their offices at noon during the summer months. Re-

ports from Rock Island, Ill., and other places show that dentists in those sections are also taking a rest on Saturdays. It is a custom that should prevail everywhere.

Arkansas State Dental Society.—New officers elected are: President, C. C. Sims, Dardanelle; first vice-president, A. L. Pendergrass, Helena; second vice-president, C. G. Farrow, Little Rock; corresponding secretary, W. D. Jacoway, Dardanelle; secretary and treasurer, R. W. Quarles, Van Buren.

Badly Burned by Exploding Vulcanizer.—Dr. J. M. McClish, a prominent dentist of Healdsburg, Cala., was severely burned about the hands, chest and face, May 1st, by the explosion of a vulcanizer. He also inhaled much gas and his injuries are such as to cause him to abandon his profession for many weeks.

The Path of Safety.—The scientists have discovered that the use of soft foods is ruinous to the teeth and if generally persisted in would result in a nation of toothless individuals. This rule, however, works but one way and does not apply to liquid foods. The path of safety lies in the direction of hard foods and soft drinks.

Organize Against Dead-beats.—The dentists of Sterling and Rock Falls, Ill., have organized a permanent association. One of the objects of the organization is to protect its members from dead-beats, with whom they claim to be overrun. A list will be made, and any one not paying his dental bill will be refused credit by the dentists.

Illinois State Dental Society.—President, C. N. Johnson, Chicago; vice-president, W. F. Whalen, Peoria; secretary, Elgin McWhinney, Chicago; treasurer, C. P. Pruyn, Chicago; librarian, J. T. Cummings, Metropolis City; members executive council, C. E. Bentley, Chicago; O. L. Frazee, Springfield; G. E. Warren, Pontiac; chairman executive committee, M. L. Hanaford, Rockford.

Broken Broach or Needle Injures Eyesight.—Miss Margaret Miller, of Grand Rapids, Mich., has been gradually losing her eyesight and as a last resort was taken to Ann Arbor for an operation. It was found that a piece of a dentist's needle had been left in one of her teeth, which had afterward been filled. The piece of needle was removed and the young woman is recovering.

Dental Thieves Arrested.—The dental office of Dr. William Koehler, Portland, Ore., was entered by thieves about the middle of March and $175 worth of instruments and supplies stolen. Later one of the thieves, who had tried to sell the stolen property to a dental college, was arrested and plead guilty. Most of the lost articles were recovered. A second thief has now been arrested and awaits sentence.

Indian Territory Dental Society.—At the newly formed dental society in Indian Territory, the following officers were elected: C. W. Day, president; A. E. Bonnell, vice-president; F. A. Stickel, Jr., sec-

retary; S. A. Long, treasurer. W. W. Bryant, with the president, vice-president and treasurer, constitute the new executive committee. The place of the next annual meeting is left to the discretion of the executive committee.

Appointed on State Board.—Governor Cummins has filled the Dental Examining Board of the State, naming Dr. W. H. De Ford, of Jefferson, to succeed Doctor James, President of the Board, of Fairfield, whose term has expired; and Dr. F. H. Rule, of Ackley, to succeed C. S. Searles, of Dubuque, who resigned because of his removal to Chicago. The terms of office of members of the Board expire July 10th, next.

Died from a Fall.—Dr. J. W. Van Sant, Peoria, Ill., who fell down the elevator shaft at his office building May 9th, died from his injuries Sunday evening, May 22nd. His spine was injured, but it was thought he would recover and death was not looked for. Doctor Van Sant had been very successful in the practice of dentistry. He was 52 years old and leaves a widow and three children. Governor Van Sant, of Minnesota, was a cousin.

Tennessee State Dental Society.—Newly elected officers are: Dr. T. D. Towner, Memphis, president; Dr. J. A. Cottrell, Knoxville, first vice-president; Dr. A. A. McClanahan, Springfield, second vice-president; Dr. C. A. Sevier, Jackson, recording secretary; Dr. R. Boyd Bogle, Nashville, corresponding secretary; Dr. W. P. Sims, Nashville, treasurer. Executive committee, Dr. R. Melenty, Nashville; J. R. Beach, Clarksville, and R. M. Joyner, Union City.

A Statesman's Teeth.—Some unknown statesman left his false teeth in the wash-room at the Neil House, Columbus, Ohio, during the Republican State convention "excitement," May 17th, states a city paper. The fact that the teeth belonged to a statesman is the rankest supposition and the evidence is purely circumstantial. Granting, however, that the "set" belonged to a statesman, he still has his jaw left. A statesman's loss of teeth is merely incidental.

Alabama State Dental Association.—Officers elected for ensuing year are: President, H. Clay Hassell, Tuscaloosa; first vice-president, M. N. Vann, Attalla; second vice-president, Charles L. Gunn, Gadsden; treasurer, W. B. Fulton, Birmingham; Secretary, L. A. Crumley, Birmingham; state board of dental examiners, J. A. Hall, T. P. Whitley, R. B. Chapman, W. E. Proctor, P. R. Tunstall; executive committee, H. C. Hassell, L. A. Crumley, H. D. Boyd, Jr., H. W. Randall.

Kentucky State Dental Society.—Newly elected officers are: Dr. J. C. Montgomery, of Elizabethtown, president; Dr. Henry Pirtle, of Louisville, vice-president; Dr. W. M. Randall, of Louisville, secretary, and Dr. F. R. Wilder, of Louisville, treasurer. The board of trustees consists of twelve members, all of whom were re-elected but four. The new trustees are: Dr. S. H. Heavrin, of Louisville; Dr. A. S.

Kerley, of Glasgow; Dr. McFerran Crow, of Versailles, and Dr. Max M. Eble, of Louisville.

New Dental Society.—A new dental society has been formed in Washington, D. C., to be known as The National Capital Dental Society. Officers elected are: Dr. James A. Hunter, president; Dr. William B. Daly, vice-president; Dr. Starr Parsons, recording secretary; Dr. Jesse B. Schafhirt, treasurer; Dr. Chester Beatty, librarian, and Dr. J. K. Halley, corresponding secretary. The officers constitute the executive committee. Drs. Starr Parsons and Emory A. Bryant have been selected as delegates to the convention of the national society.

Reorganization Plan.—The Illinois State Dental Society adopted a reorganization plan at its State convention in Peoria last week. Briefly, the plan involves county and district societies, along lines of the plan in vogue in the State Medical Society, and a large membership is expected within a short period. As each county is organized, the State society recognizes the county society as its representative in that county, and a practitioner can become a member of the State society only by being elected a member of the county society. When the organization of the State is completed, the entire membership of the State society would be composed of the members of the county societies, and no one could become a member except through the local society of the county in which he lives. All members of each county organization will be members of the State society. Each member of the county society will pay dues covering the membership of both the county and State societies to the county society, and the Secretary of each county society will forward to the Secretary of the State society, the State society's share of the dues paid by each member.

The Dentist's Hold.—It has recently been decided by a New York court that a dentist owns a tooth he has filled until it is paid for. The jury that tried the suit of Dora Forster, a dressmaker, to recover $5,000 from Doctor Rothkranz, a dentist, whom she accused of imprisoning her for three hours, "unlawfully, wrongfully, and without probable cause and with intent to humiliate her in the estimation of her associates," returned a verdict for the defendant. The plaintiff testified that a tooth that the dentist filled was not satisfactory; that she had paid him $35 and refused to pay the balance until the tooth had been properly treated. "He told me," testified the witness, "he would pull out the gold if I did not pay him, and said I would never get out of the house with his gold in my tooth." She further testified that he refused to allow her to go out of the house and called a policeman. The policeman refused to interfere and went away. The dentist then forced her into a chair and pulled the tooth. The dentist claimed that Miss Forster went to his office and made a row and refused to go away, and the policeman corroborated him. The tooth was drawn, the policeman said, at Miss Forster's request.

Recent Patents of Interest to Dentists.—

757885—Antiseptic tooth-brush holder, James A. Cochrane, Cincinnati, Ohio.

757907—Tooth-brush with washing device, Friedrich Fritz, Trieste, Austria-Hungary.

757938—Dental appliance, Wm. T. Lyon, Portland, Ore.

758422—Dental matrix-retainer, Wm. Crenshaw, Atlanta, Ga.

758309—Box for containing tooth-powder, Mordecai H. Fletcher, Cincinnati, Ohio.

758109—Tooth-brush, Harry E. Sandiford, New York.

758741—Dental Lamp, Hiram E. Dunn, Warren, Ohio.

758750—Artificial denture, Oliver C. Haldeman, Upland, Neb., and J. R. Haldeman, Independence, Mo.

758764—Tooth-brush, Wm. A. Macleod, Boston, Mass.

759189—Dental or surgical chair, Luther T. Parsons, Princebay, New York.

759498—Filling teeth, Eduard Bosch, Geneva, Switzerland.

759490—Tooth-brush, John A. Yates, Rockfort, Ind.

Copies of the above patents may be obtained for ten cents each by addressing John A. Saul, solicitor of patents, Fendall Building, Washington, D. C.

AMERICAN DENTAL TRADE ASSOCIATION.

ST. LOUIS, MO., JUNE 18, 1904.

At the last meeting of The American Dental Trade Association, held in St. Louis, June 15th, 16th, 17th, the following resolution was unanimously adopted:

WHEREAS, In the estimation of our Association, which is composed of representative manufacturers of, and dealers in, the United States, the amendment to the Patent Laws introduced in Senate Bill No. 4256, House Bill No. 6771, will remove a class of patents which have long been a cause of annoyance to the dental profession. Be it therefore

Resolved, That The American Dental Trade Association heartily endorse the amendment mentioned above, and urge favorable action thereon, and that the Secretary be instructed to notify the Committee having the amendment in consideration of such action.

AMERICAN DENTAL TRADE ASSOCIATION,
LEE S. SMITH, *Secretary*.

The amendment reads as follows: "But no patent shall be granted upon any art of treating human disease or ailment or disability or upon any device adapted to be used in the treatment of human disease or disability or attached to the human body and used as a substitute for any lost part thereof, or upon any art of making such device, unless such device is adapted to be put on the market and sold."

REGULAR CONTRIBUTIONS

ALVEOLAR PYORRHEA—ITS CAUSE, SEQUELÆ AND CURE.*

BY D. D. SMITH, D. D. S., M. D., PHILADELPHIA, PA.

I have debated quite seriously in my own mind how best to meet present obligations and at the same time adjust this subject of pyorrhea to the needs of a constantly widening circle of earnest seekers for light and truth. My first inclinations were toward a familiar "talk" on the "Cause, Sequelæ, and Cure of Pyorrhea," but a somewhat critical examination of the present literature of the subject seemed to demand that a more comprehensive review should be made of some of the unsatisfactory, misleading, and positively harmful teachings which burden our text-books and magazines, and which for lack of something better have been quite generally received and adopted by the profession.

Alveolar pyorrhea is a disease so burdened with names and vapid descriptions the wonder is that it still persists. We are indebted to the researches of Doctor Peirce for the following: "Suppuration Conjointe," "Pyorrhea Inter-alveolo-dentaire," "Gingivitis Expulsiva," "Osteo-periostiti-alveolo-dentaire," "Pyorrhea Alveolo," "Cemento Periostitis," "Infectioso-alveolitis," "Calcic Inflammation," "Phagedenic Pericementitis," "Riggs' Disease," "Hematogenic Calcic Pericementitis," "Blennorrhea Alveolaris," "Gouty Pericementitis."

PYORRHEA ALVEOLARIS IN AMERICAN TEXT-BOOK OF OPERATIVE DENTISTRY.

We may, without appreciable loss, practically disregard the articles under the above titles and many others until we come

*Read before the Philadelphia County Medical Society, April, 1904.

down to about 1892 to '95, when Professor Peirce ran through the *Cosmos* a series of papers on pyorrhea, in which he aimed to make what he called the "gouty diathesis" almost wholly responsible for expressions of this disorder. These articles, revised or rewritten, as they appear to have been, for the "American Text-book of Operative Dentistry," have unfortunately done much of the thinking on this important subject for dentistry, and thus it has come to pass that Doctor Peirce's theories are widely accepted in the profession. As a consequence, it is by no means uncommon for the dentist to tell his patient that he is suffering from "gouty teeth," or "gout in the teeth;" nor for the laity to take it up and say, "My dentist says I have got gout in my teeth." Is it not time to enter an emphatic protest, even to the adoption of severe criticism if necessary, against such inadequate and erroneous conceptions of this most serious mouth disorder?

Doctor Peirce defines pyorrhea as

"A molecular necrosis of the retentive structures of the teeth—their ligament and pericementum—an atrophy of the alveolar walls, together with a chronic hyperemia of the gum tissue which leads to limited hypertrophy. After a variable period the teeth drop out and the morbid action ceases with their loss. An examination of the roots of the teeth before and after their exfoliation usually exhibits deposits of calculi upon their surfaces. The disease is usually, though not always, attended with flow of pus from the alveoli."

WHAT PYORRHEA IS NOT.

Alveolar pyorrhea is not a disease transmitted through germ infection in foods, drinks, the atmosphere or by any other agency; neither is it in the remotest degree a result of some systemic disorder or constitutional vice, as rheumatism or gout. It is not necessarily "molecular necrosis of the retentive structures of the teeth;" indeed, this condition as applied to the alveoli is quite unusual. The alveolar border forms the real support for the teeth, and necrosis of it does not appear until the inflammation has engaged the gum tissue and the pericementum at some portion of the cervix with considerable violence. It may be fairly questioned whether in many cases of pyorrhea the pathological state in the alveolar border is true necrosis. It is more frequently a condition of interrupted nutrition, due to the presence of irritating inflammatory products and other accumulated toxins on and about the teeth.

WHAT REMOVAL OF EXCITING CAUSE WILL DO.

Certain it is, with the removal of the exciting cause, and properly guarding against return, the nutritive function in the alveolar border is re-established, and the retentive structures of the teeth resume their normal physiological activities. In many well-attested cases new alveolar structure has been thrown out around the roots of teeth, tightening them in their sockets, and the whole recovered with normal striated gum tissue having perfect festoons.

THE LIGAMENT OF A TOOTH.

The "ligament" of a tooth should be considered as purely hypothetical. No structure analagous to a "ligament" exists in connection with a tooth when in a normal condition. Frequently when there is gradual loosening of a molar tooth through progressive pyorrhea, there will be an exhibit of thickening of the gum tissue with increasing adhesion to one side or portion of the root of the tooth. This is but an abortive effort of nature to strengthen and retain the tooth in position. This thickening of the gum tissue—a wholly abnormal process—furnishes the only approach to a structure about the teeth which approximates a "ligament." I have never observed this tissue to be the subject of necrosis.

ONE RESULT OF PYORRHEA.

That the teeth "after a variable period" of pyorrheatic attack "drop out," and that "the morbid action ceases with their loss," is quite true.

PYORRHEA AND PUS FORMATION.

Alveolar pyorrhea is not "usually" but *always* attended with formation of pus. The very meaning of the term indicates "pus discharge," and that from about the affected teeth.

ANOTHER QUOTATION FROM "AMERICAN TEXT-BOOK."

"Clinically the cases in which these phenomena are observed may be divided into two classes: First, those in which the disease process appears to begin at the gum margin. The second class, those in connection with which there is much controversy, begin at some portion of the alveolus between the unbroken and apparently healthy gum margin and the apex of the root, the pulp of the tooth being alive."

PULP OF TOOTH ALIVE IN BEGINNING PYORRHEA.

The pulp of the tooth in the beginning of the pyorrheatic infection we believe is alive probably in every instance, for pyorrhea seldom or never originates in the tissues about a devitalized tooth or root. There may be, and often is, pus discharge due to *necrosis of the root*, but this is a condition essentially different from alveolar pyorrhea.

EXAMPLES OF SIMULATED PYORRHEA.

I have observed in a few instances decay upon the proximate surfaces of lower molars occurring below old fillings, and extending to or below the gum margins, where the infection from the carious root induced simulated pyorrhea and this between two *devitalized* teeth. In these cases the removal of the irritant—the decay—and filling the cavity, wholly cured the pyorrheatic tendency. Such instances cannot be regarded as a contradiction of the statement that pyorrhea seldom or never originates in the tissues about a pulpless tooth.

TEACHINGS RESPECTING CONSTITUTIONAL PYORRHEA.

That there may be no confusion in regard to the teachings of this paper, but that they may be clearly understood, I wish to interpolate here that it is my firm conviction, having observed the clinical expressions of pyorrhea since the time it was generally known in this country as Riggs' disease, and having carefully studied it for the past ten years with the determination to ascertain its cause and to divine its meaning in the mouth, I repeat it is my firm conviction that there is no such expression of pyorrhea as that designated "Class 2d—Pyorrhea Alveolaris of Constitutional Origin"—found in the "American Text-book of Operative Dentistry," from page 401 to 420. The cut on page 408, "Hematogenic Calcic Pericementitis" (Burchard), is wholly a figment of the imagination; no pathological state resembling it ever presented in clinical experience.

THE IMPOTENCY OF DENTAL TEACHINGS.

Listen to confessions of the impotency of dentistry when it stands face to face with a grave difficulty and a diagnosis wholly wrong:

"Inasmuch as these constitutional conditions are complex in their manifestations, and their medical and hygienic management almost exclusively

in the hands of the physician, the duty of the dental practitioner is confined largely to the question of diagnosis; the local treatment, however, must be varied in accordance with the peculiarities of the local pathological condition."

It seems difficult to imagine dental teachings making such lamentable confession of inefficiency.

SOME ILLUSTRATIONS IN "AMERICAN TEXT-BOOK OF OPERATIVE DENTISTRY."

I believe it is not stated that the cuts illustrating the chapter from which we have quoted in the "American Text-book of Operative Dentistry," were not drawn in representation of any true pathological states; nevertheless, like the one alluded to, they all seem to have been manufactured to suit conditions and descriptions *as written into the article.* Pictures of teeth, alveoli, calculi, and even of instruments, are so strained and inaccurate as to be wholly untrue to clinical observations.

THE CONSTITUTIONAL THEORY.

A recent magazine article, discussing this imaginative phase of pyorrhea, attacks its opponents with a kind of cyclonic literary *rush,* as though with one stroke of the pen to sweep from the arena all who dare oppose the theory of the constitutional origin of pyorrhea. Permit a single extract:

"The disorder to which I ask your attention is that type of chronic suppurative necrotic inflammation in which the infection of the retentive structures of the tooth is deep-seated, where the suppurative inflammation is of the abscess type rather than the ulcerative, where salivary tartar is not the obvious irritative cause, and where local treatment alone is inadequate to effect a cure or prevent a recurrence of the disorder, and especially where some error in the nutritional process of the individual is a constant factor in the case."

As a literary composition this sentence seems faultless, but it imparts little if any get-at-able information respecting pyorrhea.

Another quotation from the same author is equally ambiguous:

"It is in connection with this condition, the hyperacid diathesis of Gauterlet, Bouchard, Michaels and others, that we find pyorrhea as a concomitant local disease."

I am unable to discern in all this, anything that can add to our knowledge of pyorrhea.

TO WHOM WE ARE INDEBTED FOR THE CONSTITUTIONAL ASPECT OF PYORRHEA.

In a "Contribution to the Study of Metabolism" it is said:

"We are greatly indebted, in my opinion, to the work and observations of Peirce, Talbot, Rhein and others, who have called our attention with much emphasis to the importance of constitutional conditions of malnutrition as predisposing factors in the causation of pyorrhea, for the more closely we investigate the matter, and the more intimately we recognize the data of nutrition in its normal and aberrant expressions, the more clearly do we see the direct bearing which nutrition exerts upon the phenomena of disease invasion."

DOCTOR RHEIN ON PYORRHEA.

Doctor Rhein's position seems plainly stated in his article on "Studies of Pyorrhea Alveolaris," read before the 1st District Dental Society of N. Y., January 18, 1888:

"It matters not so very much if we are correct or not as to our knowledge of the etiology. To cure the disease is the thing as far as we are concerned in our practice; whether the disease is purely local or only a symptom of some hidden trouble, our treatment *depends upon local remedies for its successful issue.*"

Thus it seems evident that Doctor Rhein places the emphasis NOT on the "constitutional factors," but on causes which are of a local origin. "Our treatment," he says, "depends upon local remedies for its successful issue." From the quotations made it would appear that Doctor Rhein has been misrepresented in the above article, and forced to the defense of "constitutional conditions as predisposing factors in the causation of pyorrhea," when he himself favors the belief that local agencies are the cause.

DOCTOR TALBOT ON PYORRHEA.

Doctor Talbot not long since, as you will recall, complained in *The Digest,* with apparent justice, that dentists are not readers. Doctor Talbot is one of the trio mentioned as emphatic defenders of the theory of a "constitutional vice in the causation of pyorrhea." So far as I have been able to discover Doctor Talbot's contribution to alveolar pyorrhea consists in affirming that it is not pyorrhea at all but that it is "interstitial gingivitis." I have failed to discern in just what way the nosology of this affection calls our attention "with *much emphasis* to the constitu-

tional conditions of malnutrition as predisposing factors in the causation of pyorrhea."

The closing paragraph of "Studies in Metabolism" is as follows:

"From the view-point which I have endeavored to set before you, it *must be* obvious not only that pyorrhea, within the limitations which I have for present purposes confined that term, is the indication of a state of abnormal nutrition, but that it being a result thereof, we must seek to remove the constitutional vice before we can hope to successfully treat the local disorder."

This method of treatment is certainly unique, and reminds us of a flying-machine promoter who, to get his "flyer" into the air, proposed to suddenly move the earth away from the machine, leaving it flying in mid-air.

"CONSTITUTIONAL VICE" CURED IN PREPARATION FOR TREATING THE "LOCAL DISORDER."

To the ordinary mind it would seem a somewhat perplexing, if not a really difficult problem, to suddenly eliminate a "constitutional vice" from the system to prepare the mouth for local treatment, especially as we, as dentists, have little or nothing to do with constitutional disorders or constitutional remedies. The article from which the above quotations are made fails to cite a single clinical case, or even to give us a hint as to what this "constitutional vice" may be; neither does it suggest a remedy or a mode of treatment.

The medical profession as yet has never presented the possibility of diagnosing general disease or of determining a constitutional vice through such chimerical methods as analyzing saliva.

BRIEF REVIEWS OF OTHER WRITERS

Turning to other writers upon this subject, we see such frantic efforts at originality in endeavors to find causes for pyorrhea, that their theories appear like some incoherent mental ataxia, and are so conspicuously absurd as to deserve only ridicule. One, in all seriousness, recently in a paper before a large dental society, ascribed a principal cause of pyorrhea to "infected tooth-picks." We had supposed that wood tooth-picks or even the more expensive goose-quills to be so cheap and accessible as to preclude the use of them second-handed. If they are

really inoculating so many mouths with pyorrhea, it would seem to be a condition demanding the attention of boards of health. Whilst these "infected tooth-picks" are given *first* place in the list of causes, the same author has another most original method of introducing his "pyogenic germ" to his destructive work (although he says "we are unable to fix upon any specific germ"): "A deposit of calculus about a tooth proper, forcing away the soft parts, may enable the germ to enter the socket by infiltration." "Infiltration" through "calculus about a tooth *proper*," surely that should be an easy way in which to introduce this nondescript to his work of infection.

IS THE DENTAL DEGREE "A BADGE OF PARTIAL CULTURE?"

It seems incredible that such crude pabulum, some of it evolved from a so-called analytical laboratory, can be palmed off upon the professin as *science*, but such is the case. If we would relieve the dental degree of the stigma stamped upon it by a professor in the University of Pennsylvania, when he called it "the badge of a partial culture," and save it from overwhelming disgrace, we shall speedily relegate such infantile science as "infected tooth-picks," "infiltration of pyogenic germs," "uric acid diathesis," "gouty teeth," "constitutional pyorrhea," "gouty pericementitis" and many other absurdities, to an irretrievable oblivion.

THE ONE MANIFESTATION OF PYORRHEA.

If we can now descend from the lofty heights of intellectual imaginations from which we have trespassed upon the unknown and unknowable, and can touch the commonalities of earth once more, I would ask your attention to a study of alveolar pyorrhea from the standpoint of its one and only manifestation —a mouth disease of adult life due to local conditions and local causes.

Pyorrhea is a circumscribed inflammation in the tissues of the mouth; an inflammation caused wholly by the presence of natural teeth and the stagnant septic matter adherent to their surfaces.

In a beguiling pamphlet recently sent out to the dental profession by a manufacturing concern, may be found a labored attempt to present alveolar pyorrhea as a constitutional *disease* due to a so-called uric acid diathesis. This pamphlet, although signed by an M. D., is evidently from the pen of one wholly without ex-

perience. Having a meteoric surface-glow, the article is well framed to mystify and mislead respecting the true origin. and not less the treatment, of the disorder. Names, facts and inferences are speciously garbled and perverted, unmistakably in the interests of a commercial preparation recommended as a constitutional remedy.

WHAT TEACHINGS RESPECTING CONSTITUTIONAL CAUSES HAVE DONE.

We shall do well to remember that in constitutional disturbances pyorrhea is to be reckoned with as a *cause* of disease, but never as a *result*. The etiology of pyorrhea can no longer be dismissed by the theorist with the affirmation that "it is a disease of constitutional origin;" for its manifestation near to or past middle-life only; its universal location about the roots of natural teeth; its special association with teeth of dense structure having large bell-shaped crowns practically exempt from decay; the complete immunity of all edentulous mouths, and more than all, the absolute cure without regard to constitutional conditions which attends the removal of the cause or the extraction of the teeth, all point with unerring precision to it as a trouble having positive and distinct local orgin. The last analysis of the teachings which ascribe "some constitutional vice" for this condition are not only ambiguous, but they are illogical and absurd, and end in utter mental confusion. Such teachings have not only hindered, but they have practically arrested, all investigation and fixed the status of pyorrhea very generally as "incurable."

THE ASSIGNED CAUSES FOR PYORRHEA.

The *local* cause universally assigned for alveolar pyorrhea is deposits of calculi upon the teeth. Those pretending to find it a disease ascribe it to the "gouty diathesis" or to some "constitutional *vice*." These presentations are wholly inadequate to account for the manifestations of this depraved condition.

WHAT ACCURATE OBSERVATIONS REVEAL.

Accurate observations reveal the fact that deposits of calcareous matter (tartar) upon the teeth, while causing absorption of their supporting structures, seldom or never give rise to a condition of true pyorrhea. The teeth more frequently found enveloped in masses of salivary calculi are the lower incisors and

cuspids and the superior first molars. While these teeth may be loosened even to the point of exfoliation through absorption of the alveolus, due to increasing deposits of tartar, this condition is not alveolar pyorrhea. The development of pyorrhea in the mouth is wholly the result of local infection; an infection arising from the breath, from vitiated mouth secretions and excretions and from chemical decomposition and decay of waste substances in the high temperature of the mouth. Toxins from these and other sources are consequently present in the mouth, and becoming cemented to the teeth chiefly by the mucus secretion, form the so-called bacterial placques, which are retained day after day, often year after year, becoming stagnant, offensive and most virulent infection.

It is common to both sexes, but rarely if ever found to originate in connection with devitalized teeth. It seldom manifests itself before middle life, and then much more commonly in mouths in which practically full and crowded dentures are found.

HEREDITARY INFLUENCE.

Hereditary has no influence whatever in the development of the disorder. That hereditary has an influence in determining the shape and general characteristics of the teeth, is well known and readily conceded; but while certain shapes and characteristics of the teeth are favoring conditions they are in no sense a cause of the trouble.

TEMPERAMENT AS A FACTOR.

Temperament as a factor in mouth pyorrhea is very imperfectly understood. As an example of wholly erroneous views respecting it, a professor speaking recently upon this point declared that the disease prevails more generally in the sanguineous temperament. The actual condition is exactly the reverse of this. It is extremely doubtful if a mouth with the typical marks of the true sanguine temperament—teeth of yellowish hue, small, rather than large, perfect in mould, shape and structure, short and having little cervical constriction, regular in development, never unduly crowded, occlusion perfect—was ever the subject of pyorrhea. I have never seen one. *Per contra*, the nervous, bilious and lymphatic temperaments, with all their compounds and admixtures, present formations and conditions of teeth and jaws which favor the retention of infection and the consequent

development of pyorrhea. No classification of temperaments can possibly make the subject plain.

LOCAL CONDITIONS.

There are certain local conditions that promote the development of pyorrhea, and these demand most careful study. They are, first, the *presence of natural teeth in the mouth* (pyorrhea is impossible without natural teeth); second, the shape, character, number and placement of the teeth themselves; and, third, the condition of the crown surfaces and the character and properties of the fluid environment of the teeth when the mouth is in repose. That the *presence* of natural teeth is necessary for the development of pyorrhea is manifest in the fact that it never appears in an edentulous mouth, even though the supposedly favoring constitutional factors, uric acid and gout, may be present.

The general character of the teeth, whether they are dense in structure with only a thin layer of cementum enveloping the roots—a condition necessitating limited and difficult circulation in this tissue—or whether they are softer in structure and possessed, as is usual in such cases, of a thicker cemental layer, thus permitting freer circulation in the cementum, with increased vital energy to oppose external encroachments, present important local conditions *favoring* pyorrhea in the one case and *opposing* it in the other.

The anatomical formation of the teeth also, whether having large and irregular crowns with strongly marked necks, and crowded into small, misshapen arches, or whether the reverse of these conditions prevail, viz:—teeth small or medium in size, crowns merging into roots without marked cervical constriction, and regularly set in well-developed arches—these conditions form marked predisposing or prophylactic features in the development of pyorrhea.

The third and most important factor among the local conditions for the induction of pyorrhea is the infection inevitably present on exposed crown surfaces of the teeth, especially the proximal surfaces. Even when considerable care is taken of them, viscid, toxic matter quickly accumulates upon untreated teeth, and is retained day after day, becoming stagnant and fetid, especially in the more inaccessible places, as between them and

along the gum margins. These stagnant accumulations act to obstruct circulation in the gums, cementum and alveolus, and induce inflammation in all surrounding tissue. This infection on teeth is greatly intensified in virulence and activity by the high normal temperature of the mouth, as well as by toxic emanations from decaying tooth substance and decomposing food particles. These (and if there be any special local irritants, they are included) are the more active auxiliaries in originating pyorrheatic conditions, the subjects of which are legion.

WHERE PYORRHEA BEGINS.

The inflammation of pyorrhea begins in the tissues at some portion of the cervix of the tooth, more commonly on the lingual or palatine aspect or at some inaccessible point between the teeth, frequently between the larger molars.

In the anterior part of mouths which are the object of some care, the point of attack is usually at the angle on the right side of the lower jaw, at the interspace between the right cuspid and lateral, or it may occur one tooth farther back, between the cuspid and first bicuspid. The reason for this is found in the usually inefficient method of cleansing at this point. Using the right hand, the brush is passed over the incisors, then to the teeth upon the left side, whence it is turned to the right side of the mouth, leaving one interspace and usually one tooth untouched at the angle mentioned.

Not all teeth in any one mouth are ever the subject of pyorrhea at any one time. Strong, healthy teeth with living pulps are the special subjects of pyorrheatic attacks. Teeth which have been devitalized in comparatively young life, if the roots have been properly treated, are virtually, if not absolutely, immune. This is due to the fact that cemental structure is not solidified or changed in character or quantity after devitalization of the pulp and dentin, save as it may be increased in thickness by the pericementum through external deposit.

EVIDENCE THAT PYORRHEA IS A LOCAL INFECTION.

I have never witnessed, in any case, the loosening and destruction of an entire set of teeth due to pyorrhea. With the displacement and loss of a single pyorrheatic tooth (much more a considerable number of such teeth) there is marked decrease in virulence of the infection, as well as lessening of the inflam-

matory exudates. Other proof is the fact that the movement of the tooth is always outward away from the point of the inflammation, as in effort to expel the irritant from the mouth A tooth is never forced toward the center of the mouth, but always away from it, by the pyorrheatic inflammation.

Rapid elongation, protrusion or rotation of a tooth—movements at times attended with great force and considerable pain—indicate that the pericementum and cementum of the tooth are specially involved.

THE END TO WHICH REMEDIAL EFFORT SHOULD BE DIRECTED.

To characterize the destruction of tissue in pyorrhea as "molecular necrosis" may be well enough if it is understood that the inflammation arrests, partially or entirely, the nutrition of the parts. This is especially the case in the alveolus. It is the arrest of the nutritional process which is the real cause of the excretion of the tissues at the surface. There is no zone of dead tissue exfoliated as in true necrosis. It is rather a surface necrosis. That nutrition is partially if not entirely suspended in some cases is plainly evident from the stagnant circulation, the tumefaction and purple color of the gums. The progress of the disease can only be arrested by the reinduction of normal nutrition. All remedial efforts should therefore be directed to the accomplishment of this end.

THE TEETH A CONVENIENCE RATHER THAN A NECESSITY IN MASTICATION.

When scientifically analyzed the office work of the human teeth in the digestive process will be found far less a necessity than has hitherto been supposed. In reality they play but an inconsequential part, and one easily substituted, in the preparation of foods for stomach digestion. This statement, contrary to ordinary conception, and to all previous education, may seem at first an absurdity, but when seriously considered, it will be made plain that while lack of mastication by the teeth interferes greatly with our convenience and pleasure, in no true sense can mastication be classed among the *necessities* to digestion. Foods are as perfectly prepared for the human stomach and all the digestive processes without the aid of teeth as with them This fact stands out clear and most convincingly when we consider the sick, or when we look into the mouths of the old people of today. The

sick and convalescent are nourished with prepared or predigested foods, and very many of the old people have edentulous mouths, *having regained general health after the loss of all teeth;* a goodly number are using artificial substitutes which sustain the same relation to good natural teeth that an artificial limb does to a natural one; very few have kept any considerable number of useful natural teeth to old age. In all these imperfect and inadequate conditions there is little recognition or complaint respecting inability of mastication. Good serviceable natural teeth coupled with vigorous general health in old age is an anomalous condition, while the reverse of this—few or no natural teeth and general good health—is the rule of life. Extensive grinding tooth-surface is not a requisite for successful mastication, especially for cooked foods; the urgent demand should be rather for the free and comfortable use of the organs of the mouth, including such teeth as may be made aseptic and serviceable. The one requisite for avoidance of chronic digestive and other complaints is a mouth with teeth perpetually void of septic infection; hence the loss of septic teeth is by no means an unmixed evil.

PYORRHEA A CAUSE AND NOT A RESULT.

Alveolar pyorrhea with its necessary history of antecedent, long-continued septic mouth conditions, is not a result, but the unimpeachable *cause* of many serious systemic diseases, the etiology of which is not only unknown but wholly unsuspected. Its diverse local manifestations, as the displacement of the teeth, the turning of them in their sockets, the formation of pus pockets beside the roots, the loosening of the teeth and their final exfoliation, are but minor sequelæ in comparison with the constitutional manifestations seen in the slow chronic pyemic effects.

If the effects of pyorrhea were confined to its ravages in the tissues of the mouth—the wasting of the alveolus and the exfoliation of teeth—it would be of inconsiderable importance; but the pernicious emanations from twenty or more square inches of infected tooth surface, carried in inhalation directly into the circulation through the lungs, and this augmented by the perpetual ingestion of masses of mucoid toxins—pus and other pyogenic products of the disorder—develop constitutional conditions of most serious import.

THE GRAVITY OF PYORRHEA NOT RECOGNIZED.

The gravity of states and conditions resulting from pyorrhea in the mouth has not yet been comprehended. If better understood, it would no longer be treated with comparative indifference as at present; on the contrary, it would awaken a feeling akin to alarm. As yet no comprehensive measures have been suggested by either medicine or dentistry to allay its symptoms or avert its consequences, and both professions stand in its presence to-day pitifully helpless

HOW PYORRHEA DIFFERS FROM OTHER INFLAMMATIONS.

The inflammation of alveolar pyorrhea differs from inflammations and disease conditions in other parts, in that the septic products are of necessity discharged directly into the mouth, whence they inevitably pass into the digestive tract.

Clinical observation shows the confluence of alveolar pyorrhea with rheumatism or gout to be infrequent, and if associated at all it is as cause and effect—pyorrhea the cause and rheumatism or gout the effect; a condition exactly the reverse of the "gouty diathesis" theory.

The conjunction of pyorrhea and renal complications is far more common and serious. Uremia is a usual result of pyorrhea, due in greater part to the ingestion of inflammatory products constantly disengaged in the mouth, where they are mixed with foods and drinks, and thus inevitably washed into the stomach. And here again the relation is cause and effect—pyorrhea the cause, renal complications, more commonly diabetes, the result. This has been repeatedly and indisputedly proved through cure of the pyorrhea curing the diabetic condition.

WHERE CAUSE FIRST APPEARS.

This infection appeals for recognition first of all in septic states of the breath. Poisonous deposits upon the teeth due to toxicity of the breath, are a constant menace, and principal factors in primal incitement of the disorder. Although in the aggregate such deposits may be meagre in quantity, they are exceedingly virulent and violently irritative to surrounding tissues; they are rapidly augmented by alluvium from vitiated salivary and mucus secretions, and from septic excretions, and not less by deleterious products from the necrotic condition of the alveolus

and the perpetually irritated and inflamed gum margins at the necks of the teeth.

(Examples of breath infection appear in the surface discoloration of gold plates, gold and amalgam fillings, as well as in accumulations on the teeth.)

A DISCOVERY DEMONSTRATED.

It is a matter for earnest felicitation that offensive breaths, a result generally of neglected mouths, repulsive mucoid oral fluids, and filthy conditions of the teeth, are wholly preventable and surely curable when they exist.

TREATMENT.

The cause of pyorrhea being a local irritant, whether that irritant be the presence of the tooth itself or an accumulated infection on the tooth, the beginning of treatment should always be directed to the removal of the cause. Not all teeth that have been loosened through pyorrheatic infection can be redeemed and made firm, comfortable and useful, for when the disease has progressed to necrosis which involves the alveolus and pericementum, the entire circumference of the tooth, the osseous structures about the root or roots having become absorbed until the tooth is rendered hopelessly loose—alveolar tissue once absorbed is never reproduced—immediate extraction is the proper treatment; or, if through development of a pericemental abscess, as not infrequently occurs in long-standing cases of pyorrhea, especially in connection with the molars, upper or lower, there is permanent discharge of pus from the socket, removal of the tooth is the one and only remedy.

Just here sharp distinction should be drawn between the ordinary apical alveolar abscess and the more occult and uncommon pericemental abscess. They are entirely unlike in character, in development, in prognosis and in mode of treatment. The former has been known and treated for years; the latter is of recent discovery, and is comparatively unknown. It was first differentiated by the author in 1897, and a full description of it embodied in an article which was published in the August number of the *Dental Cosmos* of that year, under the title "Pericemental Abscess." The closing paragraph of the article is as follows: "The prognosis of pericemental abscess is always unfavorable; have never been able to afford permanent nor positive relief.

The only remedy—extraction of the tooth." It would be a great gain to the profession if the conditions which lead to the development of pericemental abscess were more studied and better understood.

It should be the unvarying rule in the treatment of pyorrhea to speedily rid the mouth of all teeth which cannot be made permanently comfortable and useful. Teeth, especially molars, suffering from much alveolar absorption, if they be without natural occlusive antagonism, or any that can be rotated in their sockets, even though such movement be but slight, can never be made to retighten; their retention is a source of perpetual discomfort, a hindrance to mastication, and a positive menace to the health of the mouth. In view, therefore, of the utter inutility of such teeth, any attempt to retain them is a matter of sentiment alone; every other consideration demands their immediate removal.

Having extracted such teeth as cannot be made serviceable and comfortable, effort should be directed to the removal of all infection of whatever kind from all the remaining teeth. This infection may consist of masses of calcic concretions, coatings of stagnant inspissations, accumulations of septic matter on the exposed surfaces of crowns and roots, between the teeth, in pyorrheatic pockets, or in the many concealed nooks, crannies and irregularities found in connection with the teeth.

Dentistry affecting to see pyorrhea originate in some occult and unknown constitutional cause, has wholly failed to perceive or recognize the power of septic irritants found upon the surfaces of all untreated teeth. As there is no agency more surely destructive of the teeth themselves, nor one more provocative of general systemic disturbance, than the surface infection on them, so there is no more important operation, neither a more difficult process pertaining to the teeth, than the complete and successful removal of pyorrheatic infection. Even when attempted at all, it is an operation performed with such laxity and indifference as to render it of doubtful value.

Successful treatment for pyorrhea lies in the fidelity with which the toxic irritative matter is removed from the surfaces of the teeth, and rational after-treatment maintained. Constitutional remedies are wholly without avail except as cathartics, diuretics or sudorifics they may facilitate the expulsion of poisons already

absorbed. Scraping of alveolar margins, removal of vital bone, massaging of the gums, and various other impractical modes of treatment have been suggested, but none of them indicate any true appreciation of the pathological conditions involved. If necrosed bone is present, which is seldom the case, it is to be removed; beyond this, the less disturbance to the tissues involved in removal of the infection, the better the results.

All treatment should be such as surgery would institute for any wounded, abraded or excised surface in other parts, the difference being the difference in the character of the tissues with which we are dealing and in their environmental surroundings.

There is no organ or tissue in the system to which a tooth, with its anatomical and physiological complexities, can be logically compared. If relieved of infection and restored to healthful condition, being fixed in the oral cavity the teeth are at once replunged into an adverse environment, and resubjected to adverse influences

What, then, can be done by medical interference? Practically nothing. It cannot be made too emphatic that the treatment consists in frequent and forcible change of environment—a change from bad to good in all that pertains to the teeth, and in all mouth conditions. Every effort should be directed to reestablish healthful nutrition, which has been interrupted, if not wholly arrested, in the surrounding alveolus, pericementum and gums. No irritative toxins from the breath, from mouth fluids, offensive food particles or from other sources should be allowed on the crowns, at the necks of the teeth or in any pyorrhea pockets. Every concealed recess and nook should be reached and carefully cleansed of all accumulations with suitable instruments; and this, followed by the polishing of all exposed surfaces, including pockets, recesses and depressions, between the teeth, at the gum margins, or wherever infection may be found upon the teeth. This can be effected by hand methods only. All wheels, brushes or other revolving instruments driven by power, should be wholly discarded. Specially shaped wood points—orange-wood is to be preferred—secured in suitable holders—porte polishers—should be used for this purpose. With these all parts of the mouth and all surfaces of the teeth can be reached and operated upon. The best polishing material is a fine pumice-stone. The dry powder can be taken up and carried to place on

the wood points, previously shaped and freshly dipped in water for this purpose. Free application of the pumice-stone and vigorous use of the wood points are the most efficient agents known for removing infection from the teeth and not less for placing them in the most favorable condition to void further deposits. This treatment should be repeated every forty-eight to seventy-two hours at the beginning, and regularly continued until there are evident indications of abatement of the inflammatory condition and the closing of the pus pockets, when the intervals of treatment may be gradually lengthened until the limit of about one month is reached.

Every month with pyorrheatic tendency should be rigidly subjected to this prophylaxis treatment at the hands of an expert operator for relief from the inevitable recurrence of infectious accumulations on and about the natural teeth. This treatment should be supplemented by *local* medication only. Internal remedies are not indicated except as tonics, or in special cases. Perhaps there is no better antiphlogistic or germicide for external use—and the mouth is an external cavity—than that rather disagreeable preparation known as phenol-sodique. It can be used *ad libitum* in the mouth and with great benefit, after each treatment. I have found it most efficacious applied to the gums on lint or bibulous paper.

After the second or third treatment the gums about the pyorrhea pockets and at the points between the teeth where there is greatest eversion of the festoons, should be touched regularly with deliquesced zinc chlorid. The handling of this preparation should always be upon wood points. A small stick with point shaped to reach the parts, may be dipped in the solution and applied as desired. It acts as a stimulant to the nutritional process. Tincture of iodin applied to the gums over a pyorrheatic cavity or tooth, is a valuable adjunct in the stimulation of healthful nutrition.

Results from the treatment as outlined have proven a source of astonishment, and not less of gratification, to many who have interestedly witnessed them. Long standing cases of pyorrhea, regarded as incurable and practically abandoned by the "constitutional cause" theorists, have readily yielded to this treatment and been cured in from six to twelve months. The recital of one case will suffice for many that might be cited in evidence:

A liberal-minded practitioner in the metropolis who had inspected some cases treated, recommended a pronounced and particularly intractable case—a gentleman aged about fifty-five years, with a full set of large, strong teeth, of the type peculiarly liable to pyorrheatic infection—for the treatment. The case presented no special constitutional disturbances save general malaise and an unexplainable, paroxysmal, nocturnal cough, for which he was being medicated without benefit by his family physician, who frankly admitted that he knew nothing as to the cause. Inspection of the mouth revealed general infection over all the teeth, especially the large molars and bicuspids; an offensive breath, deep pus pockets, considerable alveolar absorption and marked eversion of the gums between the molars, upper and lower. Two teeth only were decayed—the upper second molars—each having a small cavity on the distal face. The right lower second molar had a large pericemental abscess between the roots, which was discharging pus freely; this tooth was sore to pressure and quite loose. It was immediately extracted and treatment instituted for the remaining thirty-one. The records show first treatment on November eighteenth; the second on the twenty-first and the third on the twenty-sixth. There were three treatments in December, three in January, two in February, two in March and two in April. Result, after five months' treatment, cessation of all pus discharge, complete clearing of the breath, retightening of all teeth, closing of the pus pockets, reformation of festoons, perfect comfort in mastication, clearing of the skin, and entire disappearance of cough.

SERUMAL DEPOSITS.

Serumal deposits found upon the roots of teeth in pyorrheatic pockets are often difficult of diagnosis, and more difficult to remove. These deposits differ greatly in character and manner of formation from the salivary incrustations found upon the necks of teeth at the gum margins. They consist, for the most part, of smooth, hard masses of calcic matter, deposited from the stagnant fluids in the pyorrheatic pockets, cemented to the root in some irregular formation or inaccessible position, on lower teeth especially. They are not the occasion of marked inflammatory action, although the infectious matter is commonly deep seated. They create pockets beside the roots, in which deposits accumulate until the alveolus separates from the root

throughout its whole extent. In many instances, the presence of these deposits can only be determined by the thickened condition of the overlying gum tissue—a characteristic of this infection—by the continued pus discharge under pressure, and by the persistent movement of the tooth, often attended with great force, in a direction opposite the accumulation. Serumal deposits destroy the life of the cementum and pericementum, and when these tissues have once separated, even though the deposits may have been perfectly removed, the vital union is never re-established. For this reason extraction of the tooth is frequently the only remedy.

SUPPORT FOR LARGE GOLD FILLINGS AND PORCELAIN INLAYS IN INCISORS.*

BY R. A. SUHR, D. D. S., CLEVELAND, OHIO.

The following method of giving support to large incisor gold fillings and porcelain inlays will present itself in cases where the incisors, including cuspid teeth, are badly broken down from extensive decay, also where repeated gold fillings have proven a failure. The cutting-edge being thin and the lifeless condition of the tooth causing the enamel rods to break away, compelling the cutting away of the crown of the tooth to replace it with a porcelain crown. The lingual surface of the tooth is ground of its enamel, then preparing cavity and margins for gold or platinum foil.

A piece of 22k. and 28 gauge gold-plate annealed to allow easy adaptation for burnishing to the entire lingual surface, extending the gold distal to mesial to what shall be the contour of the gold filling and to the cutting-edge. Fig. 2.

These holding securely in place while drilling with the smallest round bur through the gold into the tooth, one near the cutting-edge and the other below. Fig. 1.

Solder pins (platinum) taken from artificial teeth to the gold plate. Fig. 1. Later enlarge opening made in the tooth to allow passage for head of the pins. Replace upon tooth, reburnishing, and mark location for the pin that is near cavity, which is for preventing filling from drawing away from the cutting-edge of

*Presented at Ohio State Dental Society, December, 1903.

the tooth. Figs. 1 and 2. Solder another pin to the place marked, having it of proper length that it be not above the labial surface, thereby showing through the gold filling, or by finishing the filling to grind away head of the pin. Dip into alcohol while in

FIG. 1.—Incisor lingually, shows opening made for the passage of pins, also the floor of gold wiih the three pins attached ready to cement in place. The extra pin, when floor is in place, lays against the cutting edge of cavity for the prevention of the gold filling from drawing away at that point.

FIG. 2.—Lingual and labial floor with gold floor cemented in place. The labial showing margin of cavity and floor of gold ready for packing the filling and the position of pin at the cutting edge for the anchorage of filling at that point.

heat from last soldering; it gives it rigidity. Pullen's soldering tweezers has included with its set one that is of advantage for holding the pin while soldering. Then polish before cementing in place and the floor of the cavity is made. Fig. 2.

FIGS. 3, 4 and 5, show lingual and labial views of a central and lateral and cuspid completed, showing the gold supported lingually and the gold filling labially.

A protection for the remaining weak tooth structure and to the filling. The opposing tooth striking against the floor of gold. After the proper setting of the cement, for which I give another sitting before drilling. The rapidity and ease that the cavity can

be filled when floor is in position is surprising, but it is advisable to have assistant support lingually with fingers to avoid any misplacement while malleting. With porcelain inlays the same method may be used, using platinum for the support and platinum solders for attaching the pins, using two or more pins for the attachment of porcelain. Fig. 2.

When in position on tooth, burnish platinum foil to cavity prepared, then wax platinum floor and foil, giving contour of filling in wax, withdraw it altogether and invest, boiling out the wax and proceed with porcelain.

THE DOCTOR ANALYZED.*

BY J. W. CLEMMER, M. D., COLUMBUS, OHIO.

Medicine is a profession of specialties. Dentistry was the first to establish itself. It has long since assumed the proportions and worth of a distinctive profession. As an art it must remain distinctive; as a science it belongs to medicine. This relationship is emphasized for the purpose of this paper, under whose caption the writer has the temerity to attempt an analysis of that composite medical scientist known as the doctor.

The subject will be discussed under the following classifications:

1. The doctor's entrance upon professional work.
2. The relation of the doctor to the profession.
3. The doctor as related to society.

*Read before the Ohio State Dental Society, December, 1903.

4. The doctor's duty to himself.

5. The doctor as a diagnostician.

6. The good and the bad in the doctor as a result of professional work.

7. Nature as a teacher and the ideal doctor.

HOW THE DOCTOR ENTERS UPON PROFESSIONAL WORK.

The proudest, happiest moment in the doctor's life is when, on commencement day, diploma in hand, he receives the blessings and enconiums of his teachers. He receives the hand of fellowship and is welcomed to the profession. He is told that he is about to enter a calling full of grand possibilities, dignities and honor. Achievement to the neophite appears as easy to gather from future prospects, as fall pippins from the orchard at the old home.

After these memorable events, the doctor undertakes the solution of the momentous questions of a location and an office sign to guide a waiting public. As time goes on he finds that the particular location of the office does not make so much difference as what he puts in the office. It requires time and the sacrifice of pedantry, however, to learn that the office requires something more than fine furniture and a display of instruments and trappings. He finds that the laboratory and operating-room should be furnished with the best-directed means and methods to relieve human suffering. They require tact and talent, patience and skill. This furniture comes from the great store-house of wisdom, developed in college curriculum and polished in the school of experience. The question as to whether the doctor shall wear a white duck office-coat is not so important as whether the coat shall be maintained in its native color, even at the risk of an extra laundry bill. If "cleanliness is next to Godliness," in a dental office dirt is devilish and soap a virtue. The ideal surgeon is characterized by an intimate acquaintance with the nail brush. The advance in scientific knowledge among the laity will not tolerate faulty technic in professional hands. The completeness with which asepsis is carried into effect is a sharp index to the character of the operator and his work.

THE RELATION OF THE DOCTOR TO THE PROFESSION.

There are doctors and doctors, all kinds of men engaged in professional work. Some stand in relation to their work as artists

and scientists, developing new facts and methods, thus elevating the profession. They have the dignity and worth of professional gentlemen. They engage in their work, not as a trade, but as a profession worthy of their best effort. There are others who regard the profession simply as a means of livelihood. They plod along and dress like ordinary craftsmen. They look upon their work as so much commerce and resort to the ways of shopmen in using the arts of advertisement. Doctors with commercial standards in professional work may not see any impropriety in advertising, but in so doing they over-reach the bounds of individual refinement, not to mention the breach of professional ethics, when it is remembered that in advertising they are not calling attention to ordinary commodities, as stoves or hats, but to their personal qualifications. There is a difference as to whether personal tact and talent or merchandise is proclaimd in public print. The doctor may announce his profession, location or removal without violating the rules of good conduct, but when he advertises his accomplishments he ditches his profession and unhorses himself There is still another advertiser of the "blow-hard" type, not less reprehensible than the first. He exploits in the public press, under guise of news without paying the usual rates, his attendance upon noted people, his operations, his methods, instruments, discoveries, etc. He discusses on the street corners his patients, their diseases, and his skill in their relief. No opportunity is lost to exercise his brazen egotism.

The organization work of the profession requires united effort to keep the colleges, the societies, journals and its general literature up to the highest standard.

Membership in any organization assumes unavoidable responsibility. The doctor accepts, with his license to practice, this responsibility which he cannot avoid.

No man is free to act under moral or civil law, unless he chooses to do right. He can employ natural forces only as he works in accord with natural law.

Thus it is with the doctor and the profession. He cannot enter it without accepting the conditions imposed. He could not join a company of bandits and do less. Organization means compliance with rules of conduct.

The profession has both written and unwritten laws to govern the conduct of its members. The written laws are intended only

for the "breachy" doctors. The unwritten laws are innate with every true gentleman who needs no sign-board to direct him in right relations to his fellows and the public. A prerequisite of a member of the profession is that he be a gentleman; nothing more, nothing less, can be exacted in a code of ethics.

THE DOCTOR AS RELATED TO SOCIETY.

The profession owes society a consideration in every community. The doctor should advise against evils which the greed, ignorance or carelessness of individuals inflict upon the public. His training naturally qualifies him to serve the public as a sanitarian. Every doctor should be interested in the work of municipal sanitation. There are many ways in which he can serve the needy and afflicted by assisting the work of charity. He can advance the work of education by serving on the school board. Should the doctor accept a political position, in local affairs, let it be fortified by a strong manhood, honor and honesty. His name should be a synonym for good government. The doctor should take interest in public affairs as a representative citizen, but he should avoid partizan politics.

The doctor should make the social defence against the various systems of faith-healers by accepting the bit of truth found in each, when the balance will sink out of sight by the weight of its own fully.

THE DOCTOR'S DUTY TO HIMSELF.

Doctors, as a rule, neglect the business side of their work. They give their energies to the scientific and philanthropic aspects of their calling, very much to the neglect of their bank accounts. The public understands this, and the unscrupulous ply the arts of the imposter. The doctor is a poor collector and often a poor man. He dislikes the financial relation between himself and his patient; hence he accumulates a long list of unpaid accounts which at the end of his career constitute a large part of his estate. The experience of past generations of doctors would teach those who follow the words of wisdom. Gratitude, compensation and patronage are often lost to the lack of business methods. Is it not true, gentlemen, that a bill is often lost because its payment is not urged at the proper time? Is it not true that patients cease your patronage because they owe an old bill? Is it not true that the patient who has quit you because he owes

you, has lost gratitude for the work already done and even dislikes you? One of two things should happen. Let me advise: either collect your bills or hang the ungrateful debtor. Be governed by business methods rather than by sentiment. You must recognize the value of your services if you would have your patients appreciate and pay for them.

THE DOCTOR AS A DIAGNOSTICIAN.

The doctor's reputation often hinges upon his ability as a diagnostician. Diagnosis depends largely upon accuracy of observation and thorough examination. The patient will not deprecate the doctor's ability if he makes repeated examinations before offering an opinion, but if the diagnosis proves faulty, his reputation will suffer. An important factor in making a diagnosis and, incidentally, an element in the acquisition of an extensive practice, is the tact and gentleness with which the doctor examines his patient. The first visit of the patient is likely to be full of fear and apprehension. Such a patient requires more than anything else to be assured that his fears are unfounded. Tact and patience on the part of the examiner are necessary to inspire confidence. This bit of diplomacy is necessary to a thorough examination; without it the diagnosis and the patient may both go astray. Only a few minutes are required to win the confidence and patronage of the patient, by inquiry into his subjective condition and the events that induced him to seek relief. The most successful practitioner is he who inspires the most confidence and conducts his examinations with the greatest gentleness and tact consistent with thoroughness. The most unpromising of neurotic patients will become easily managed, if only the practitioner will consider the psychological side of his subject. The office of the practitioner is the play-ground of mental influence. How often has toothache ceased before the patient mounted the operating chair? Suggestions of relief were enforced by every event in relation to the patient's visit. The doctor is constantly offering suggestions that are accepted by the patient. Positive, repeated suggestions will accomplish much. Try it.

THE GOOD AND THE BAD IN THE DOCTOR AS A RESULT OF PROFESSIONAL WORK.

There is something in the nature of professional work to change and modify the native characteristics of its devotees. The

environment and association of the doctor have an exaggerated influence upon his social and moral life. This influence works upon a sliding scale between good and evil. The doctor is both good and bad. There is no intended division of practitioners into two classes with all the good in one and all the bad in the other. All human nature partakes of these opposite qualities.

The life of the practitioner, from the nature of his work, develop both sunshine and storm. The doctor represents the best and worst of men. At times the magnanimity and philanthrophy of his profession takes possession of his heart and he is willing to make any sacrifice for the welfare of his patient. At other times he would rather see the patient die under his treatment than get well in the hands of another physician. He would rather see his patient suffer an aching tooth under his treatment than get relief at the hands of his neighbor dentist. A close analysis of the doctor sees him tender and severe, forgiving and resentful, charitable and selfish, generous and unmerciful, liberal and envious, fair-minded and prejudiced. Doctors are known to be gratified to see their failures turned to success by another. Others would rather read the obituary of a patient than to see him carry his failure to another practitioner.

The doctor's love may be the purest or his hate the deadliest, his friendship the strongest or his enmity the most severe. What is it in the doctor's calling that develops such opposite qualities? What can be eliminated from his education or work that makes him so devilish? His professional work is more artful and scientific than ever before. There must be some means to produce a corresponding improvement in his Jekyll-Hyde disposition. His judgment along scientific lines has a high degree of perfection in the healing art, but his sensibilities have had no training, resulting in a one-sided development.

The trouble grows out of the fact that professional education contemplates only physical phenomena. We should consider the spiritual side of man. Psyschology and moral philosophy must enter the problem, if we would extricate ourselves from this embarrassing situation.

The fundamental laws of nature are as simple as they are universal in their application to details. One of these is the law of vibration or attraction, of which gravity is only a part. In this way all manner of like associations are formed. Minerals

are massed, birds flock, animals herd, men associate for good or evil. Like attracts like. Love, hope, fear, hate malice envy—all multiply, each after its kind. Smiles and tears are contagious.

The law applied in the problem in hand, it is found that when man is physically disordered by disease, the spiritual man is morbid. The spiritual functions, having to mediate through the physical organism, manifest a corresponding perversion. It is the life-work of the doctor to bring harmony out of disorder, to comprehend the pathological state and cure morbid processes. The patient is unhappy and wears the gloomy garments of discontent. In this depressing atmosphere the doctor, day after day, is subjected to a contagious influence of mental and moral aberration —a fact not usually appreciated.

By education and experience the doctor is able to guard himself against contagion of physical disease. He is prepared to avoid inoculation or infection. He understands sanitation and disinfection and is thus exempt from physical danger.

Unfortunately his education is incomplete. The colleges failed to teach him the physiology and pathology of the spiritual man as they did of the physical man. They taught him to avoid communicable diseases of the body, but gave him no instructions as to the contagion of moral sensibilities. He was not instructed against the contaminations of mental and moral aberrations, as bigotry and intolerance, deceit and treachery. The student learns bacteriology, antisepsis and disinfection, but is untutored as to the microbes of scandal and misanthropy. He is taught that physical disorder in unnatural. He should understand that it is just as evil to violate spiritual law as it is to violate physical law, that moral and social distempers are just as unnatural as physical disorder, that it is no more natural to lie than it is to limp, to steal than it is to cough, to hate than it is to have decayed teeth.

The spiritual man being so neglected, it is not strange that doctors should manifest the various forms of selfishness, that they are envious and resentful, that they do not get on together as partners, that they are jealous. The wonder is that they are so kind, so good, so charitable.

The great desideratum in the doctor's life is the supreme art to which all others pay tribute—the art of living. To know how to live happily and wisely is the highest accomplishment in human experience.

NATURE AS A TEACHER AND THE IDEAL DOCTOR.

Greatness is characterized not so much by acquirement as by development. Many men find knowledge but do not discover themselves. Man is a unit in the order of nature. He is united with a series of natural phenomena. In order to comprehend his relation to the world about him he must know something of his own existence, as related to the vital energies of nature. He must accept nature as a teacher to unfold his own life and amplify the meaning of individual experience.

This is culture, pure and simple; knowledge makes one acquainted with facts, nothing more; it is circumspective, scientific. Culture is introspective and philosophic. Knowledge is academic and mediates through the acquirement of facts. Wisdom comes from the great school of nature and is evolved out of experience.

There is a great principle behind nature working through immutable laws and forces, century after-century, as witnessed in the phenomena and processes of its vital energies. The one great problem of man is to unfold and comprehend this principle and establish his relation to it. This grand thought or order of nature is being gradually revealed to the observation of man. He appreciates the lines of Pope more to-day than ever before—

> "All are but parts of one stupendous whole
> Whose body nature is and God the soul."

When men study the works of nature as they study the works of art, they find hidden back of the natural forms, as flower, tree, river, cloud and star, the vital principle or Great Artist, working through immutable forces and laws, in accord with which are evolved the wonderful productions of growth and development in the matchless splendor of color, design, harmony and beauty.

As God is the Supreme Artist, so the highest art in man is the art of living—living in recognition of his place in the order of nature and his relation to the Great Artist. The wonderful works of nature from microbe to the sun, with their kaleidoscopic beauty, harmony and power, constitutes the laboratory of nature and reveals how God works in the universe.

The dental laboratory turns out a work of art that is a close duplicate of nature's form, color and use. The dentist demonstrates that thoughts are forces and have creative power. Artificial teeth have their origin in the thought-forces of the dentist before they receive their natural expression or embodiment. Be-

fore the creation of natural teeth they were conceived in the thought-forces of the great creative principle. Art copies after the Great Artist. The dentist in making a set of teeth imitates nature. His ideals, his models and his ambition conform to natural processes.

Man's noblest impulses and highest inspirations, whether his energies take to music, mechanics, fine art, professional or industrial life, have their origin in the perfected work of nature. There are no ideals or inspirations above nature, either for physical or spiritual development. Good workmanship must have an ideal. Idealism is man's highest conception of truth.

The unattainable and the unknowable often reduces his ideals to a symbolic representation. His attainments are beset by limitations. As the limits of knowledge are extended the ideals become higher and we approach nearer to the heart of nature. As nature is made to yield her secrets, advancing generations of men reduce mystery and symbolism into conformity with truth.

This may be said of all pursuits in life. When the dentist masters the problems of heredity and the things we call dyscrasia, diathesis, morbid influences, both local and systemic, he will find he is getting acquainted, not so much with his patient, as with nature. As the doctor looks to nature for his ideals and models, as he imitates her in the most exact methods, and as he is proud of his accomplishments of the physical plane, so the doctor may look, likewise, to nature for his ideals and accomplishments in the development and betterment of his spiritual life. When the doctor follows the teaching of nature on the spiritual plane as he does on the physical, his social and moral obliquities will be replaced by the virtue and reward of correct living. Envy, hatred, malice and all forms of selfishness will dissolve out of his work and his life by the softening influences of altruism.

Such thoughts furnish the doctor with a stimulus to wise deliberation. They add wisdom to professional erudition. They lead to the highest form of education, because they aid self-discovery and interpret the meaning of experience in its proper relation to others. Such thoughts correct selfish propensities and go to establish the brotherhood of man. This teaching of nature affords a correct philosophy, because it puts man in command of the order of the universe. It is the basis of true religion, because it establishes a close relationship with the Divine Spirit.

DISCUSSION.

Dr. J. S. Cassidy.—The chairman of your executive committee notified me some time ago that I was down for discussion on a paper the subject of which was "The Doctor Analyzed." I now realize that the discussion is a little hard after hearing the excellent paper of Doctor Clemmer, and the principal reason of the hardness of the discussion is owing to the fact that I cannot find anything in the Doctor's paper I can oppose very strenuously. However, in order to keep in touch with the old popular idea that doctors cannot agree thoroughly on any subject, I will say that I think his paper is more on the synthetical order than on the analytical. The essayist does not take up his task by dissecting his subject, he rather builds it up, piece by piece, and all elements are so well chosen, that the plete subject, the ideal doctor, was made a very perfect man, indeed. This ideal doctor as presented by the accomplished architect is most considerate toward his professional brethren; he is hopeful, always kind and considerate to them; he is always solicitous for the welfare of his patients; he confines himself to the printed code of ethics that we have talked about. He takes as his motto the Golden Rule that Doctor Wright was trying to quote this morning—"Do unto others as you would have them do unto you," and do it first.

The essayist also said that doctors should be just to themselves; that is, they should require prompt and reasonable recompense for their services. Now, that is a point where a great deal of prudence should be resorted to. I have known bills to run along for ten or fifteen years and they were finally paid in full, whereas if they had been urged too strenuously those bills would not have been paid at all. He should be prudent in that matter. There might be a system adopted such as shown to us this morning by Doctor Smith. It is a good idea for the doctor to be just to himself.

There is another thing in which I cannot fully agree with the essayist. I am sure that the practice of medicine *per se* does not influence the doctor to devilish acts at times. My impression is that the practice of medicine in any of its branches, is more uplifting, and more helpful to poor humanity than any other calling, save one, and a majority of us here who are dentists, I presume, will agree with me in this statement. Is it true that a Mr. Hyde exists more or less in every doctor? Does he exist in the doctor more than other people? I think not.

The essayist suggests that to protect this devilish nature which sometimes gets in doctors, that the study of psychology may help him out in that respect. That is very true, and it is very much to his advantage to have studied psychology, and to keep it up; but unfortunately with the doctor more than with other persons he is compelled to study and understand more or less of the physical science and studies of psychology and moral philosophy from the standpoint of the materialist; thus entirely, but unconsciously, perhaps, ignoring the existence of the human soul.

I want to thank the Doctor for his paper, and I want to thank him especially for his allusion to the importance of the study of the laws of

vibration. There is no natural phenomenon that is not caused by or consequent to vibration. It is vibration by which we can conceive of the sweetness and beauty of the rose, the harmony of music and the grandeur of electricity, and heat and light.

Dr. W. H. Whitslar, Cleveland.—Herodotus, one of the earliest writers among medical men, mentions the various specialties of medicine practiced during his time. He mentions specialists for the care of the stomach, the eyes and the teeth, thus early recognizing dentistry as a specialty of medicine.

For centuries the growth of this specialty seems to have been stunted as we hear nothing during this period that tends to show any progress of the aforesaid art.

Climatic conditions, the intermixture of races and the diversity of foods have made the care of the teeth a necessity and it remained for the enterprising and progressive Americans to develop the principles of dentistry to circumvent the ravages of decay.

We all know of the difficulties that Dr. Chapin A. Harris encountered in his endeavor to start a dental college. Fifty-two years after his struggles the American Medical Association at Richmond, Va., organized a section in stomatology as a specialty *per se* of medicine. This met with the heart approval of such great men as Dr. Samuel D. Gross, of Philadelphia, Sayre, of New York, and Dr. Nathan S. Davis, of Chicago. This section at the present time is highly honored by the profession.

While dentistry may be recognized as a specialty of medicine, one fact is paramount—it is the only specialty of medicine that grants a degree without a knowledge of medicine in the general.

A D. D. S. permits a practitioner to practice dentistry only, while any other specialist of medicine may at any time, if he so desires, become a general practitioner. This fact is made more forcible in foreign countries than in the United States, some countries refusing the title of doctor to one whose degree includes only the D. D. S.

Doctor Clemmer, in his paper, makes a very clever distinction when he says, "As an art, it must remain distinctive, as a science it belongs to medicine." The old-time jest at the expense of the profession that "A doctor may bury his blunders," surely does not apply to the dentist. He finds them staring him in the face when he would be glad to disown them and crying out at him from dying nerves and turbulent abscesses.

Dentistry as an art has made most wonderful progress within the last quarter of a century. An art is greatest when it most nearly simulates nature and with the advent of porcelain on the scene, there seems but little required to complete the claims of dentistry as an aspirant for a position of honor among the arts.

Doctor Clemmer has given us a comprehensive view of the dentist's life and environment, developed as he says, in the college curriculum and polished in the school of experience.

How true it is that education does not consist of rules and principles learned in our schools and colleges, but rather of the application of those rules and principles to our daily needs.

In my capacity as teacher it has been my experience on various occasions to receive letters from graduates who, on beginning to make practical use of the principles taught in the school, remark that it is a very different thing to stand under a demonstrator and perform an operation under his instruction, than it is to tackle it all alone without advice from an experienced source.

This responsibility is the first chapter in his dental education.

Occasionally we hear a newly-fledged dentist say he has learned more by experience than was ever taught him at college, little realizing that the experience mentioned is but the application of the knowledge he gained while at school.

The association of progressive dentists, each seeking all the good he can find for the advancement of his profession, cannot but be elevating and ennobling and tends to eliminate from the profession the petty jealousies so frequently found among members of the same calling.

A code of ethics is not a necessity if we live above its requirements, but it serves as a check to those individuals whose natures might tempt them a little beyond the margins of ethical confines.

A dental society enlarges, rather than restricts, one's opportunities, as any interchange of ideas must benefit the individuals of a community. A dentist's close contact with individuals in his professional capacity tends to develop in him the proper delineation of character and he becomes unusually observant.

Let us all get ourselves under complete control, for by calmness, tact, patience and confidence in our ability to master the case at hand, we inspire confidence in our patients and the battle is half won.

The spiritual aspect of the Doctor's paper has especially appealed to me, for the desire to alleviate suffering and minister to the afflictions of our fellow-beings, brings us closer to the Divine Being whose mission on earth was to alleviate the woes of mankind. Personally I wish to thank Doctor Clemmer for this very able paper which is a heart-to-heart talk to the profession, and I am sure it has been greatly enjoyed by all present.

SUGGESTIONS IN DENTAL RECORDS, BOOK-KEEPING AND NOMENCLATURE.*

BY H. T. SMITH, D. D. S., CINCINNATI, OHIO.

The season of this meeting occurring as it does in December, and just previous to the time when the dentist will give some attention to his dental records and account books, seems propitious and it is my excuse for offering some suggestions upon these subjects of dental records, nomenclature and book-keeping.

In regard to nomenclature: I have for some time thought

*Read before the Ohio State Dental Society, December, 1903.

that our words for expressing and for recording the degree of penetation of caries in tooth substance has been somewhat deficient. In attempting to accurately record these stages of dental caries I find that we have practically only two terms, the words "superficial" and "deep seated." To indicate the other stages with more or less involvement of the pulp, the use of entire phrases and sentences are necessary; as "pulp nearly exposed," "pulp quite exposed," etc. The profession need not be so impoverished of ideas, and especially in regard to that one disease, dental caries, the treatment of which claims the major portion of the dentist's time. The disease certainly deserves the most complete and most definite nomenclature possible.

As a precedent, what have we for instance in general materia medica? There we find a certain prescription for the burns of the first degree, and a different prescription for the burns of the third degree, indicating that there is a definite nomenclature for burns; and yet the demarkation between those degrees is not *more* definite than between the different stages of dental caries that we might formulate.

A definite dental nomenclature seems to date back to the time of the World's Columbian Dental Congress in 1893, when Doctor Black presented his essay upon that subject, and he calls attention to the fact that there was at that time in use among the French dentists a nomenclature of dental caries. A modification of that scheme, according to Dr. Julio Endelman, is the one at present in use in France and elsewhere on the continent, and it is the use of this nomenclature that I suggest for adoption.

The scheme is briefly the classification of the penetration of dental caries in tooth substance into four principal degrees, as follows:

Caries of the *first degree* is that in which the enamel has become decalcified, the disturbance being limited to the enamel tissue. Indicated—Caries 1°.

Caries of the *second degree* is that which affects the enamel and dentin, the pulp being as yet protected by a sound layer of dentin. Indicated—Caries 2°.

Caries of the *third degree* is that in which the carious process has penetrated to the extent of nearly exposing the pulp, this being coverd by a softened and infected layer of dentin. Indicated —Caries 3°.

Caries of the fourth degree is that in which there is an actual exposure of the pulp of a greater or less extent, including all the stages of inflammation and putrifaction of that organ. Indicated—Caries 4°.

Paul Dubois has further subdivided the fourth degree of dental caries into five different stages, designated as 4^{1}, 4^{2}, 4^{3}, 4^{4}, 5^{5}. Thus:

4^{1}. Pulp disturbances of a slight degree, causing pulpitis.

4^{2}. Infection of the canals, without affecting the pericementum.

4^{3}. Infection of the dentinal canals and apical space, causing slight pericementitis, subacute or chronic.

4^{4}. Infection producing slight alveolar disorders, gingival fistula, or alveolar abscess of moderate intensity.

4^{5}. Infection producing serious disorders, acute or chronic pericementitis, with suppuration, pericemental cysts, and reflex disorders.

The advantages of such a system would be several. In our dental schools it would facilitate descriptions and enable the student to associate recognized forms of treatment for different stages in the progress of dental caries. In the papers and discussions of our dental societies the same advantages would obtain, increasing the facility with which they could be understood by ourselves and by foreign dentists. And apropos of the subject in hand the increased facility with which we could record operations and transcribe history of cases, would be quite worth while.

The system of nomenclature just presented might be changed in some of its details, and modifications would perhaps suggest themselves to us all, but with a little study it will be found, that on the four principal degrees, the stages of penetration in the progress of dental caries are concisely covered.

The further division of the fourth degree is somewhat arbitrary, but it seems to cover the various stages of pulp infection and sequelæ.

If we aim at universality in dental nomenclature, and that should be our object, the scheme could be used as it is with advantage.

There is one other suggestion in nomenclature which might

be made; that is, the adoption of the words "currette" and "curretting" into our dental vocabulary. If I remember rightly, Dr. M. L. Rhein mentioned the term a year or more ago. I would suggest that "curretting" be made to indicate that part of the surgical treatment of pyorrhea alveolaris which consists in the scraping of the roots of teeth. It might include the process of removal of calcarious deposits from any part of the teeth, but perhaps better, should be confined to the instrumentation of the roots. That would distinguish the ordinary removal of calculus with the scalers above the gingival line in the process of cleaning teeth, from the more thorough scraping or curretting of the roots in the treatment of pyorrhea. We would then have a distinct class of pyorrhea instruments known as dental currettes—the Allport Currettes, for instance. In our dental records, the term curretting would be useful as indicating a definite operation.

And finally, the bookkeeping system which I have to present is briefly the adaptation of the lose-leaf ledger system, now so commonly used in mercantile houses, to the needs of the dentist.

The diagram of the teeth is one that I have revised, and to the records commonly kept I have added a space for "Saliva Test" and one for "Temperament" and a space for "History of the Case."

The page is nine and one-half by eleven and one-half inches in size and is ruled with a double column for accounts, giving about sixty lines.

The W. B. Carpenter Co., of Cincinnati, have made this copy for me and will make additional copies for any dentist who will send for them.

DISCUSSION.

Dr. S. D. Ruggles.—The offering without copyright of a system for records by a busy man indicates a high regard for professional ethics, and I have nothing but commendation for Doctor Smith in this most neglected field.

Dental nomenclature has been perfected to a very high degree, especially through the efforts of Doctor Black, and by its help we can designate with great accuracy the angles, surfaces and lines of teeth and cavities; but how many could stand before this body and tell in one word the exact degree of penetration of caries in a given case conveying the same idea to every one present?

Doctor Smith's suggestions are similar to a system offered the pro-

fession some years ago by a French author at the Columbian Congress at Chicago and published in its proceedings. The latter, however, had too many subdivisions and offered additional opportunity for error.

I find it quite a burden at times to transfer records from my Allen blanks to my ledger, for the average assistant cannot be relied upon, and the laws of the State accept none but the original record.

The card system idea the Doctor has incorporated with his scheme is a great saving of time.

You will notice that no provision is made for the records of deciduous teeth, therefore I would suggest the addition of a small diagram in a different colored ink.

Dr. J. R. Callahan.—To start the discussion I would like to say I have paid some attention to the card system, and to this form of bookkeeping, and I believe these are the best diagram and past-account sheets I have ever seen. I think it is the best of its kind. I don't know but I shall try it, although I am wedded to the card system for many reasons. I express my thanks to Doctor Smith for the work he has done. The Doctor spoke of making a record of your cases on a slip, and handing that to your bookkeeper, or lay it on the desk. That becomes your original account, and when you go to the court, and the court asks for the original account, you haven't got it, and your ledger cannot fill the bill. So it has been my practice to make my ledger account the original account, and I can swear to that in court. It seems to me that that is an important item.

Doctor Jones.—There are just two things I follow—that is a place allowed for registering the temperature, and the condition of the saliva. We all know that the decay is only a local evidence of the condition of the patient's health, and it is a nice thing to know what the saliva test would be at this year and what would be the experience a year later. Probably the conditions are altogether changed, and you would alter your treatment.

Dr. W. H. Todd.—I think a system of this kind is almost absolutely necessary in dental practice. I am wedded to the card system, and I want to speak of a little thing I have in my office. I found when I went to Chicago last year that the dentists there had a pad upon their table, and the young lady in the office would write upon that pad the name of every person who enters the office, whether it be a collector, or a visitor, or some one to see the young lady herself, or some one to see the dentist, and it is the nicest thing I ever had in my office. I found when I came home in one of our stores here a book that had every day divided off—every day in the year. The book is left on the desk, and the young lady opens it at the day of the month, and it has, of course, the year, because it is just a year book, and every person who enters my office she puts his name down, and not only that, but the time that he came into the office, so that if there is a dispute about the time, you have the record there. If there is a telephone message it goes down, and at the end of the day I can look over this, and if I have missed any charges, if I have missed any telephone

messages, or missed somebody, I find it right there—there is a record of it, and I know of many times I have saved twice the price of the book in one week by finding out that there was a treatment I didn't charge for. I think it is one of the nicest things I ever had.

Doctor Wilson.—This little book that Doctor Todd has presented has a splendid feature about it. There has been quite a good deal of thieving around dental offices and if every person who comes in there is put down, there may be some chance of detecting or finding out where these thieves are.

A Member.—I am charmed with Doctor Jackson's method of recording. He uses this arrangement when a patient comes in: In his reception-room he has a desk at which he has a stenographer, and while he is talking about the case the stenographer takes down the conversation, at least the salient points of it, and it is a permanent record, and could be used if necessary. It seems to me there is a great deal of misunderstanding some times as to price, etc., and many other things we might think of that would be proper in a record.

Doctor Barnes.—We all like the idea of keeping a record in such a way that it would be valuable to us in years hence.

The only thing I would suggest in taking saliva tests is that the time of taking test be given, whether in the early morning, or noon, or whether after dinner, or just as the business of the day is closed, because there is a difference, and we should keep a record of this. I think that the dot system of general record is good, but whether it would make this more valuable than it is you can judge, but I think it would, because you would be able to place upon one line all the operations of a single side; whereas, if you had three or four different operations you would have three or four different lines covered. You could have places for gold—and it is well to put down the kind of operation you perform, because you want to know for all time to come how lng certain fillings have lasted in certain mouths, and how often decay is recorded. If you have any space at the right of card for remarks, you can use it. I have on my card which I have changed some from the dot system—I have D. C. F., which indicates the pulp was destroyed and canal filled. I have A. B. C. F., which means abscess and canal filled. You can refer back to this part and you have no trouble. I have each operation as a particular schedule, and if patients ask me the number of opertions, I have it there for the last ten or fifteen or twenty-five years. I have the original record on a pad attached to a book. My assistant takes that from the pad which is bound in stiff covers, and in this book is placed the time when that was commenced, and the time it closed, and she makes the record when the day's work is done, and when that book is full those are filed away so that we have no trouble at getting at the original record, and there is no reason why it should not be adopted in the card system.

Doctor Smith.—There is only a word to say in regard to closing the discussion, and that is in regard to the system of nomenclature. I will say that it appeals most probably to those men who are having daily

duties in dental colleges, in their efforts to make definite statements to students, and to have them follow definite lines of treatment, for getting indications of disease—I think it would appeal very strongly to all tutors, and personally I shall make an effort to have this adopted as part of the Black system of nomenclature. There is no reason why the American dentist should not have a system. We have adopted the form of Doctor Black in 1893; we could not get a system that was universal, and this is a system convenient and original, and as I say, the system appeals to professional men—men who are engaged in teaching.

In regard to original accounts, the statement was made that the transferred account was not valuable in a court. That is true. It is the original entry, so-called, which would be good evidence, and the idea I had was to make this the original entry and this would be of use before any court of law. This is nicely bound, well bound, and it could be filed away with proper dates, and there is no reason why we should not have the data—the original data—that might be asked for in a court.

Now, a dentist has gone probably at the end of his day's work and can remember just what he has done, and what particular cavities were filled, and the condition of the patient, and there is no reason why he should not make an original entry in the ledger and that will become the best evidence in a court. But it seems to me that to men who are working without assistants to make the records, this is a nice way of making records and including the charges for the individual operation. The diagram being very much like that in the book, gives an opportunity to transfer it exactly. My idea was that such a pad as that to make the charge on could be counted an original entry.

Any method which a dentist has already adopted for keeping accounts could be brought into use with this system.

EMPYEMA OF THE ANTRUM OF HIGHMORE.

BY M. J. M'NERTHNEY, D. M. D., TACOMA, WASH.

No method of treatment, perhaps, has excited greater interest among dentists than the surgical treatment of empyema of the maxilliary sinus. The various causes have been thoroughly worked out, and the treatment intelligently practiced for many years. However, a disease, where the causes are numerous, symptoms varying in degree and character, pathology varied and inconstant, it is well to cultivate a habit of close observation. During the past year some seven interesting cases of empyema of the maxilliary sinus have ben operated by my brother, J. B. McNerthney, M. D., and myself, and the im-

portance of early diagnosis, early drainage and prompt treatment has lead me to review the subject.

ANATOMY.

The antrum is a large pyramidal cavity within the superior maxilliary bone. It is really a bony shell communicating with the nasal passages by a small orifice of the size of a probe-point. It gives the proper contour to the face without the apparent weight of the entire solid bone. The mucous membrane of this cavity is continuous with the mucous membrane covering the bones and cartilage of the nasal cavity. The principal utility of this bony shell is giving resonance to the voice.

Guarnerius, that celebrated Italian, long ago demonstrated that all musical instruments must have a hollow chamber of some kind to increase the reverberations and reflect the vibrations of the air. Little did he think as he practiced his humble trade, that he was modeling the sounding-chambers of his instruments after the sounding-chambers of the human voice. The wide variation in character of tones produced are due to a high degree to the size, shape and health of this cavity.

Many of the lower animals show interesting anatomy. The howling monkey has this sinus greatly developed, and also additional chambers to reinforce reverberations of the antrum. The coyote has no typical maxilliary sinus, but the ethmoidal cells are greatly developed, and the cavity forms a kind of a reverbatory chamber which answers some of the functions of the maxilliary sinus. We are all aware of the peculiar, sharp, metallic, unmusical tone of the voice in cases of empyema of the antrum.

PATHOLOGY.

The pathologic changes which have been described as existing in the antrum are both varied and inconstant. Eve and Hovell maintain that papillary outgrowths from the lining of the mucous membrane of the antrum often fill the chamber and occlude the outlets. Tumors of the antrum are not uncommon. Tuberculosis, syphilis, and acinomycosis may exist within the cavity. Non-erupted teeth may abscess, neighboring nerves may show evidence of a neuritis.

ETIOLOGY.

Nasal troubles as chronic rhinitis, deformities of the septum and turbinate bodies. Roots of decayed teeth may be a factor in causing the actual empyema. Trauma is perhaps as frequent a cause as any, the whole alveolar processes is too often broken off in the endeavor to extract roots—thus opening an avenue of infection to the antrum. This method of extracting is as absurd as if the general surgeon prided himself by removing a stone from the bladder, while at the same time rupturing that organ and exposing his patient to extravasation and infection. Again, forcing roots of the teeth into the cavity while extracting is not uncommon.

SYMPTOMS.

Pain of a throbbing character, discharging sero-pus or a typical pus through a fistula or nasal cavity. If no exit for pus exists, it may distend the thin wall of the antrum, and appears as a swelling on the face, or push up the floor of the orbit, producing a protrusion of the globe of the eye.

Use of the thermometer: By this simple method we have been enabled to weed out many cases early, and the dentist should make more use of this simple, though valuable means of diagnosis.

DIAGNOSIS.

Voltini, Heryng and Krause were the first to suggest and practice transillumination for the diagnosis of empyema of this sinus, and this method should be practiced. The disease is often confounded with neuralgia of the neighboring nerves, or the gasserian ganglion, a pain in this region regardless of decayed teeth is suggestive. It may be confounded with empyema of the middle and poterior ethmoid cells. Syphilis should be excluded by its well-known signs.

PROGNOSIS.

The prognosis is usually good providing the existing cause can be removed, and, in all inflammatory processes, the first attention should be given to this point. If it appears to be a simple catarrhal inflammation it generally responds to medical

treatment. However, if there is any filling up of the sinus of either hydromatous or empyemic, it must be opened. Early diagnosis, early treatment, early drainage add much to the favorable outcome.

TREATMENT.

It is evident to any one who scans the literature on the treatment of empyema of the maxilliary sinus, that there is a wide difference of opinion as to what is the best surgical method of procedure. The old method introduced by Hunter, Cooper and Astley, which is the opening of the cavity of the antrum through the alveolar or canine fossa, or whether the more modern method of perforating the lateral wall of the middle or inferior nasal meatus. The object in each case is drainage. We have in all cases followed the route through the alveolar arch. We use chloroform in all cases. Every attention should be given to asepsis; the field of operation should be cleansed with hydrogen peroxide, and followed by a saturated solution of boric acid. To obtain perfect drainage the lowest point of this bony shell should be tapped. If the second bicuspid or the first and second molar are absent or diseased, these points of entrance should be selected and a small dental twist drill directed upward, inward and slightly backward until the bone has been perforated, pus or serum follows the removal of the drill. The opening should be dilated to the size of a lead pencil, and the surrounding tissues thoroughly removed from the margins of the opening. Perfect drainage having been secured, there are few cases that will demand anything more. Cleanliness ranks first of all agents in securing good results. Plugs, tents and dressings are often factors in keeping up irritation and holding infection.

The writer is convinced that if the average dentist would make a systematic examination of every patient, empyema of the antrum would be diagnosed early, that drainage would be rewarded with speedy recovery.

SUGGESTIONS

COMBINATION OF ADRENALIN AND COCAIN FOR LOCAL ANESTHESIA.

Fritz Hartwig, Vienna.

The addition of adrenalin to cocain greatly increases the anesthetic property of the latter, and weak solutions act as well as or rather better than concentrated ones minus the addition of the adrenalin.

Therefore it was possible in a great many instances to use even as little as 0.2% cocain solutions and to obtain almost the same effect as with 2% cocain solutions without adrenalin. But I ascertained that very weak solutions of cocain do not give a sufficiently deep anesthesia in difficult cases, and at the conclusion of my experiments I found it most practicable to use a 0.5% solution ordinarily, and for grave cases, especially in acute periostitis, a 1 to 1.5% cocain solution, with addition of 1 milligram adrenalin.

The formulas for these two principal solutions are:

SOLUTION I.—0.5% COCAIN-ADRENALIN SOLUTION.

Solution adrenalin chlorid (1-1000)	1.0
Cocain chlorid	0.05
Distilled water	10.0

SOLUTION II.—1-1.5% COCAIN-ADRENALIN SOLUTION.

Solution adrenalin chlorid (1-1000)	1.0
Cocain chlorid	0.1-.15
Distilled water	10.0

I always prepare these solutions as required, the powdered cocain being divided into appropriate doses beforehand. By means of the syringe I measure the exact amount of the adrenalin solution necessary, and also the quantity of liquid for dissolving the cocain (distilled water or normal salt solution). The quantity of these solutions employed for one extraction is 4 to 8 c. c. In

the 0.5% cocain-adrenalin solution there is 0.02 to 0.01 of cocain chlorid, in the 1% solution 0.04 to 0.06 and in the 1.5% solution 0.06 to 0.10 used per extraction. In spite of large doses of cocain, I have never experienced any toxic effects from its employment. This may be explained in two ways: Because of the strong dilution of the solution, and by the addition of adrenalin. The latter preparation has, as mentioned above, the power of contracting the vessels owing to its action upon the involuntary muscles, thus rendering the area of injection almost bloodless (Doctor Braun, *Langenbeck's Archiv,* 69, 1-2). The flow of blood being lessened, it is followed by a great decrease of the functional activity of the injected tissues; and on the other hand, as a consequence of this, cocain is immediately decomposed and is thus prevented from being absorbed, as the action of adrenalin lasts for some considerable time (one to two hours). As a result, the local action of cocain becomes very marked because it has been almost entirely decomposed before it has had time to be absorbed. (Zahn Monat)—*Era.*

INLAY SUGGESTIONS.

R. B. Tuller, Chicago.

As in filling, we should aim to have our inlay stand on a good square base and an incline given to the floor of the cavity and to any steps or recesses, so that occlusal pressure forces the inlay into the cavity instead of out, as the reverse incline would have a tendency to do.

My failures in inlays, which so far have not been many, are due either to not seating the inlay correctly, or after doing so, dislodging it, only slightly perhaps, by forcing in a wedge. However, if the seating was properly done the force of the wedge would not easily dislodge it. When the wedge or the pressure of an instrument cants the inlay a little it may not be detected at all until it is fast, because the surplus cement oozing out at joint hides the relation of parts. A proper seating means that cavity is so shaped that when inlay is pressed in it will go exactly to one place and then not be easily displaced by the pressure it must be under until cement sets.

If the floor of a cavity is not made for a good base, but slopes the wrong way, pressure occlusally has a tendency to force cervi-

cal end out, or pressure at the cervical portions with a wedge slides the inlay out a little occlusally, and, as I have said, we may not be able to know that until the cement has hardened and we cannot remedy it. Proper seating means still further a seating that will resist the force of mastication, just the same as we figure on fillings. The problem of seating is one that should be well studied in the making of every inlay, or rather, the preparation of the cavity. In cavities that assume the round or oval shape, usually shallow ones on labial surfaces, it is well always to make one side so different in shape from the other that one can see at a glance if the inlay has been turned the wrong way. If the cavity is so made that one is puzzled as to which way inlay goes in and an attempt is made to force it the wrong way, it will very likely be chipped or cracked in two before we realize our mistake. —*Extract American Journal.*

ETHER-SULPHURIC ACID PREPARATION IN THE TREATMENT OF PUTRESCENT TEETH.

A. Jessel.

I wish in passing to say just a word in regard to the sulphuric-ether preparation for the treatment of putrescent teeth and for enlarged or constricted canals. We are familiar with the Callahan method and the good results following it. But we in our practice have obtained even better results from the preparation which Doctor Herbst recommends for obtunding sensitive dentin. This is prepared in the following way: A small portion of C. P. concentrated sulphuric acid is put into a glass vial, and to this is added sulphuric ether, stirring constantly with a glass rod until the acid is saturated. This is easily ascertained, for the excess of ether floats on the surface of the acid as a lighter colored liquid. This superfluous ether is then allowed to evaporate. Doctor Herbst also adds a few crystals of cocain hydrochlorid, and I find the addition very favorable, acting as it does as an obtundent. This chemical compound has great penetrating properties, and it is this, together with the fact that it can be quickly evaporated with warm air when desirable, which makes it so much more valuable than the sulphuric acid alone, such as Doctor Callahan uses. Its action, moreover, seems to be less irritating than the above.—*Dental Review.*

TEMPERAMENTS AND INLAYS.

J. M. Thompson, Detroit.

Much has been said by different writers about the translucency and opacity of porcelain. Things are not always what they seem, and while we may strive to produce what appears to be a translucent inlay, so long as we are up against the cement question we must own that at best our work is opaque. Natural teeth in their normal condition are translucent, and this is seen to the greatest extent in individuals of a nervo-bilious, nervo-sanguine, sanguo-lymphatic, or bilio-temperaments. Taking the first and last named types for examples, we find the first presenting a tooth which is yellow at the neck and bluish gray at the cutting edge. These cutting edges generaly consist of two thick plates of enamel with very little dentine between. Light penetrates such teeth only a trifle farther than the underlying dentine, but in so doing illuminates the whole which in harmony with the vital force giving luster from within outward, constitutes a thing of beauty and a joy to its owner. The last named temperament presents a tooth which generally has a bluish appearance all over. When accompanied by black hair, dark piercing eyes, cheek bones that are rather prominent, and aquiline nose, and moderate chin, we generally find a tooth which is small at the neck, of good length, terminating in broad, thin cutting edges. While we are not discussing temperaments or pathology, there are many reasons why inlays are indicated in teeth of these types. In the first named we have one in which gold lasts only fairly well, while in the last it does not do even that; consequently we find a proper place for porcelain.—*Extract, American Journal.*

AN AID IN PORCELAIN-INLAY WORK.

J. M. Thompson, Detroit, Mich.

One of the little tricks, which may be of value to those who care to try it, is the mixing of a small amount of ordinary enamel body with the XX body to produce an enamel color which will fuse at a lower temperature than when the former is used alone. There is about thirty seconds difference in the time for fusing and in fact a very good glaze can be produced in forty-five seconds less time, so it facilitates matters at times decidedly.—*Extract American Journal.*

THE MATRIX CONTRAINDICATED IN GOLD FILLING.

E. K. Wedelstaedt, St. Paul.

We have all tried and know what results are obtained where a matrix is used, so far as this relates to making gold fillings. If there is a place in dentistry where they are contraindicted it is in connection with the use of gold. The matrix and amalgam go hand in hand together, and there let the matter rest. In the fewest possible words, matrices have absolutely no place, nor are they useful adjuncts to employ where we are dealing with gold.—*International.*

OBTUNDENT FOR SENSITIVE DENTINE.

W. Kay.

Apply adrenalin chloride, 1-1000, on a pellet of cotton for a few moments. Remove and place full strength formalin on another pellet of cotton, to which apply a suitably-sized *hot* ball-burnisher. After about half a minute the most sensitive dentine can be comfortably excavated. Of course, care must be taken to protect the patient's eyes and air-passages from the formaldehyde fumes.—*Stomatologist.*

INSERTING SOFT CEMENT.

A. M. Waas, Philadelphia.

When applying very soft cement over a pulp capping smear the tip of the instrument with phosphoric acid before allowing the instrument to come in contact with the mixed cement. This will prevent the adhesion of the cement to the instrument.—*Review.*

HOW TO CLEAN IMPRESSION TRAYS.

A. W. Thornton, Chatham, Ont.

Mercury and whiting rubbed together and applied to impression trays after removing wax, plaster, etc., keeps them looking like new. This suggestion I received from Doctor McCulloch, of Perth, Ont.—*Review.*

SOCIETY

FOURTH INTERNATIONAL DENTAL CONGRESS.

This Congress will be the largest dental meeting ever held. It will not only have representative dentists of America in attendance, but prominent dentists from every portion of the world. It is a meeting that no dentist can afford to miss. Every phase of dentistry will be dealt with in the papers, and latest and best methods shown in the clinics. Have you become a member yet? If not, send membership fee at once to your State chairman. For the benefit of all we republish the list of State chairmen:

COMMITTEE ON STATE AND LOCAL ORGANIZATIONS.

J. A. Libbey, Chairman, 524 Penn Avenue, Pittsburg, Pa.

The Committee on State and Local Organizations is a committee appointed by the Committee of Organization of the Fourth International Congress with the object of promoting the interests of the Congress in the several States of the Union. Each member of the committee is charged with the duty of receiving applications for membership in the Congress under the rules governing membership as prescribed by the Committee on Membership and approved by the Committee of Organization. These rules provide that *membership in the Congress shall be open to all reputable legally qualified practitioners in dentistry.* Membership in a State or local society is not a necessary qualification for membership in the Congress.

Each State chairman, as named below, is furnished with official application blanks and is authorized to accept the membership fee of ten dollars from all eligible applicants from within his State. The State chairman will at once forward the fee and official application with his endorsement to the chairman of the Finance Committee, who will issue the official certificate conferring membership in the Congress. No application fee from any of the States will be accepted by the chairman of the Finance Committee unless approved by the State chairman, whose endorsement is a certification of eligibility under the membership rules.

A certificate of membership in the Congress will entitle the holder thereof to all the rights and privileges of the Congress, the right of debate, and of voting on all questions which the Congress will be called upon to decide. It will also entitle the member to one copy of the official

transactions when published and to participate in all the events for social entertainment which will be officially provided at the time of the Congress.

The attention of all reputable legally qualified practitioners of dentistry is called to the foregoing plan authorized by the Committee of Organization for securing membership in the Congress, and the committee earnestly appeals to each eligible practitioner in the United States who is interested in the success of this great international meeting to make application at once through his State chairman for a membership certificate. By acting promptly in this matter the purpose of the committee to make the Fourth International Dental Congress the largest and most successful meeting of dentists ever held will be realized, and the Congress will thus be placed upon a sound financial basis.

Let every one make it his individual business to help at least to the extent of enrolling himself as a member and the success of the undertaking will be quickly assured. Apply at once to your State chairman. The State chairmen already appointed are:

GENERAL CHAIRMAN.

J. A. Libbey, 524 Penn avenue, Pittsburg, Pa.

VICE-CHAIRMAN.

Wm. Conrad, 3666 Olive street, St. Louis, Mo.

STATE CHAIRMEN.

Alabama.—H. Clay Hassell, Tuscaloosa.
Arkansas.—W. H. Buckley, 510½ Main street, Little Rock.
California.—J. L. Pease, Central Bank Building, Oakland.
Colorado.—H. A. Flynn, 500 California Building, Denver.
Connecticut.—Henry McManus, 80 Pratt street, Hartford.
Delaware.—C. R. Jeffries, New Century Building, Wilmington.
District of Columbia.—W. N. Cogan, The Sherman, Washington.
Florida.—W. G. Mason, Tampa.
Georgia.—H. H. Johnson, Macon.
Hawaii.—M. E. Grossman, Box 744, Honolulu.
Idaho.—J. B. Burns, Payette.
Illinois.—J. E. Hinkins, 131 E Fifty-third street, Chicago.
Indiana.—H. C. Kahlo, 115 East New York street, Indianapolis.
Iowa.—W. R. Clack, Clear Lake.
Kansas.—G. A. Esterly, Lawrence.
Kentucky.—H. B. Tileston, 314 Equitable Building, Louisville.
Louisiana.—Jules J. Sarrazin, 108 Bourbon street, New Orleans.
Maine.—H. A. Kelley, 609 Congress street, Portland.
Maryland.—W. G. Foster, 813 Eutaw street, Baltimore.
Massachusetts.—M. C. Smith, 3 Lee Hall, Lynn.
Michigan.—G. S. Shattuck, 539 Fourth avenue, Detroit.
Minnesota.—C. A. Van Duzee, 51 Germania Bank Building, St. Paul.
Mississippi.—W. R. Wright, Jackson.

Missouri.—J. W. Hull, Altman Building, Kansas City.
Montana.—G. E. Longeway, Great Falls.
Nebraska.—H. A. Shannon, 1136 O street, Lincoln.
New Hampshire.—E. C. Blaisdell, Portsmouth.
New Jersey.—Alphonso Irwin, 425 Cooper street, Camden.
New York.—B. C. Nash, 142 West Seventy-eighth street, New York City.
North Carolina.—C. L. Alexander, Charlotte.
North Dakota.—Albert Hallenburg, Fargo.
Ohio.—Henry Barnes, 1415 New England Building, Cleveland.
Oklahoma.—T. P. Bringhurst, Shawnee.
Oregon.—S. J. Barber, Macleary Building, Portland.
Pennsylvania.—H. E. Roberts, 1516 Locust street, Philadelphia.
Rhode Island.—D. F. Keefe, 315 Butler Exchange, Providence.
South Carolina.—J. T. Calvert, Spartansburg.
South Dakota.—E. S. O'Neil, Canton.
Tennessee.—W. P. Sims, Jackson Building, Nashville.
Texas.—J. G. Fife, Dallas.
Utah.—W. L. Ellerbeck, 21 Hooper Building, Salt Lake City.
Vermont.—S. D. Hodge, Burlington.
Virginia.—F. W. Stiff, 2101 Churchill avenue, Richmond.
Washington.—G. W. Stryker, Everett.
West Virginia.—H. H. Harrison, 1141 Main street, Wheeling.
Wisconsin.—A. D. Gropper, 401 East Water street, Milwaukee.

For the Committee of Organization,

EDWARD C. KIRK, *Secretary.*

AMERICAN SOCIETY OF ORTHODONTISTS.

A special meeting of the American Society of Orthodontists will be held in the rooms of the Orthdontia Section of the Fourth International Dental Congress in the Coliseum, St. Louis, at 10:00 A. M., August 29, 1904.

ANNA HOPKINS,
Secretary.

NORTHERN INDIANA DENTAL SOCIETY.

The date of our next annual meeting, to be held at Huntington, Indiana, has been postponed to October 18 and 19, 1904.

A programme of unusual interest has been completed, a synopsis of which will be announced in the next issue of this magazine.

Don't forget to read it.

OTTO U. KING, *Secretary.*

Huntington, Indiana.

UNIVERSAL EXPOSITION--FOURTH INTERNATIONAL DENTAL CONGRESS.

AUGUST 29 TO SEPTEMBER 3, 1904—SAINT LOUIS.

The Local Committee and Bureau of Information wish to dispel from the minds of the profession and all persons who labor under any misconception that the rates of St. Louis hotels are extortionate.

We have investigated the conditions and rates of the leading hotels of St. Louis, and notwithstanding the fact that this city is entertaining a World's Fair, the hotel rates are no higher than in other cities.

We will append a number of the leading hotels and rates of same and call to your attention that it is not required of you to put up at any of the hotels mentioned, as there are many hotels and boarding houses in the city where rooms can be secured from 50 cents to $2.00 per day. The exact date should be stated in securing rooms.

We append a list of hotels and rates of same as follows:

SOUTHERN HOTEL.

The American plan rate is $5.00 per day for room without bath and $6.00 a day for a room with bath. The rate is $10.00 per day if two persons occupy the room.

PLANTERS' HOTEL.

Room without bath, occupied by one person, $3.00 to $4.00 a day. Same for two persons, $6.00 to $7.00 a day. Room with bath for one person, $4.00 to $5.00 a day, and for two persons, $7.00 to $8.00 a day.

JEFFERSON HOTEL.

Room without bath, for one person, $4.00 a day; when occupied by two persons, $6.00 a day. Room with bath, for one person, $5.00 a day and up; when occupied by two or more persons, $7.00 a day and up.

ST. NICHOLAS HOTEL.

Room without bath, for one person, $2.50 to $3.50 a day; for two persons, $4.00 to $5.00 a day. Room with bath, for one person, $3.00 to $5.00 a day; for two persons, $5.00 to $7.00 a day.

LINDELL HOTEL.

Room without bath, for one person, $2.00 a day; for two persons, $3.00 a day. Room with bath, for one person, $3.00 a day; for two persons, $4.00 a day.

WASHINGTON HOTEL.

Room without bath, for one, two or three persons, $5.00 to $7.00 a day; room with bath, for one, two or three persons, $8.00 a day.

LACLEDE HOTEL.

Room without bath, for one person, $1.50 to $2.00 a day; for two persons, $3.00 a day. Room with bath, for one person, $3.00 a day; for two persons, $5.00 a day.

TERMINAL HOTEL.

Room without bath, for one person, $2.00 to $3.00 a day; for two persons, $4.00 to $5.00 a day. Room with bath, for one person, $5.00 a day; for two persons, $7.00 a day.

MOSIER HOTEL.

One dollar to $3.00 a day, European plan, with Silver Moon restaurant attached at very reasonable rates. Located at Ninth and Pine streets.

HOTEL ROZIER.

Opposite Exposition Building, Olive and Thirteenth streets. Rooms without bath, $1.00 to $2.00 a day.

MAMMOTH HOTEL COMPANY.

Southeast corner Olive and Twelfth streets. Can accommodate 2,500 guests per day at rates from 50 cents to $1.50 per day.

THE INSIDE INN.

With a capacity for 5,500 people, is within the Exposition Grounds, erected under a contract with the Exposition management, stipulating its rates.

This hotel offers 500 rooms at $1.00 per day, 500 at $1.50 a day, 500 at $2.00 a day, and the remainder, which are larger, with baths, at higher rates. The Napoleon Bonaparte, the Forest City, the Fraternal, the University, the Kenilworth, the American, the Epworth, the Grand View, the States, the Oakland, the Iowa, the Guaranty, the West Park, the Christian Endeavor, the Visitors, and others, with a capacity of from 500 to 5,000 guests, are within easy walking distance of the World's Fair gates. In fact, we have hotels, boarding houses, apartment houses and rooming houses all over the city, of respectable character and on the street-car lines.

An impression prevails that there may be lack of accommodation at reasonable prices. Not only will there be sufficient room for all who come, but the rates will be reasonable. We appeal to the profession of the country to give information respecting the accommodations in a spirit of fairness and justice to St. Louis based upon the above facts.

St. Louis is prepared to care for and welcome all comers and to show them the grandest Universal Exposition of the world's resources and products in the history of man.

The Fourth International Dental Congress is now an assured success. Many foreign nations have signified their intention to take part in this Congress. The Islands of the Pacific ocean will be well represented. Their assembling in the center of this great republic should stimulate every American dentist to action and each individual of this great profession should feel under obligation to help push the Congress to a successful issue. We have our professional record to maintain and act the part of host. As a consequence we should endeavor to sustain the reputation of American hospitality.

Here is the birthplace of the dental college, and most of the inventors, the mechanical geniuses, and the men who have brought about the wonderful advances in our great profession.

We trust the profession of America will take hold with their accustomed vigor, let nothing be undone that will be for the good of the profession, and carry it out with the most liberal spirit to a surprising conclusion.

A list of hotels, boarding houses, rooming houses and private homes, with their rates appended, will be furnished by the Committee to all asking for same. Any other information will be freely given by corresponding to any of the following committee:

D. O. M. LeCron, *Chairman,* Missouri Trust Bldg.
Max Fendler, *Secretary,* Missouri Trust Bldg.
H. F. D'Oench.
Geo. H. Gibson.
S. H. Voyles.
Orme H. Manhard.
Joseph G. Pfasff.
G. S. Kitchen.

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The National Association of Dental Examiners will hold their annual meeting in the Coliseum building, corner of Thirteenth and Olive streets, St. Louis, Mo., on the 25th, 26th and 27th of August, beginning promptly at 10:00 A. M. Telephone and telegraph offices in the building.

The Committee on Railroad Accommodations for the East have made arrangements for fast through Pullman service to St. Louis from New York, with the Delaware & Lackawanna Railroad. Two special Pullman cars will leave New York Tuesday, August 23rd, at 10:00 A. M. The cost of our excursion, including berth each way, will be $35.50. A proportionate reduction is made for those going from Buffalo, Toledo, Fort Wayne and other cities on the line connecting with the Wabash Railroad. Those who desire to go on the special train should send notice as promptly as possible to Charles A. Meeker, D. D. S., Secretary of the National Association, or to Guy Adams, division passenger agent of the Delaware & Lackawanna Railroad.

Accommodations have been secured for the National Association of Dental Examiners at the Franklin Hotel, northwest corner of Sarah and Westminster Place, with rates from $1.50 to $6.00 per day, European plan. Hotel first-class. Secure rooms by writing to E. C. Dunnavant, St. Louis Service Co., Seventh and Olive streets, St. Louis, Mo.

Charles A. Meeker, D. D. S.,
Secretary.

RESOLUTION ON APPOINTMENT OF DENTISTS TO ARMY AND NAVY.

WHEREAS, Congress on February 2, 1901, authorized the appointment of a contract corps of dental surgeons to be attached to the medical department of the U. S. Army, and

WHEREAS, This action of Congress was based upon the recognition of the fact that dental diseases were very prevalent among all civilized nations, and that these diseases were greatly increased among American soldiers when serving in tropical climates, as was later shown by the reports of the Surgeon-General of the U. S. Army for the year 1902-1903, and also by examinations made by the dental corps of two regiments recently returned from Philippine service, in which in one regiment it was found that 87 per cent. and in the other 93 per cent. were in need of immediate dental treatment, and

WHEREAS, The preservation of the teeth is a very important factor in maintaining the general health of the soldier and consequently contributing to the highest efficiency of an army, and

WHEREAS, The report of the Surgeon-General for 1903 shows that 16,131, or 20 per cent. of the entire strength of the army, was treated during that year for dental diseases (49,483 operations being made), and that this service was necessary to relieve the men from pain and suffering and fit them to perform their military duties. This vast amount of work was done by a corps of only thirty (30) dental surgeons, a force altogether inadequate for such a service, and necessitated their working beyond the hours prescribed by army regulations for long continued periods, and

WHEREAS, It is the opinion of the dental profession that it is impossible for one dental surgeon to adequately care for the dental diseases that would naturally occur among five hundred men, it is therefore a self-evident fact that thirty (30) dental surgeons cannot properly care for our army composed as it now is, of 56,000 officers and enlisted men, and

WHEREAS, In the opinion of the dental profession the status of a contract dental corps is not in accordance with the standing and dignity of scientifically educated dental surgeons who hold a required university degree, and are obliged to pass a rigid professional examination to enter the service, and

WHEREAS, It is our opinion that the professional standing and services of the army dental surgeon entitle him to recognition as a commissioned officer, now, therefore,

Be It Resolved, That this Association most respectfully requests the Honorable Secretary of War to recommend to Congress at its next session the passage of a bill creating a commissioned corps of dental surgeons to be attached to the medical department in numbers adequate to the present needs of the service, with the following grades, viz.: First Lieutenant,

Captain, Major, and Lieutenant-Colonel, with pay, allowances, promotion and retirement of officers of like grade in the medical department.

These resolutions were passed by the Northern Ohio Dental Association, while in session at Cleveland, Ohio, June 7, 1904.

C. D. Peck, *Recording Secretary*

RESOLUTION ON THE DEATH OF JONATHAN TAFT.

Whereas, In the death of Dr. Jonathan Taft, whose death occurred at Ann Arbor, Michigan, October 15, 1903, the dental profession has lost a most valuable member; one who gave generously of his knowledge for the advancement of his ideals; a noble manhood, ideal operations and faithful services; a man, unselfish, gifted, kind and true; using his God-given talents for a noble purpose—serving man; and one whose fidelity and Christian character must ever be an example to the coming generations, of an ideal dentist.

Be It Resolved, That we, his followers and members of the Northern Ohio Dental Association, in annual Convention assembled at Cleveland, June 7-9, 1904, express and record our appreciation of his noble life, and generous contributions to the dental profession; and urge upon every member to live the life this gifted man lived, in order to bring to pass his conception of an ideal dental profession.

C. R. Butler,
Corydon Palmer,
F. S. Whitsler,
Committee.

C. D. Peck, *Recording Secretary.*

FOURTH INTERNATIONAL DENTAL CONGRESS BANQUET.

The banquet of the Fourth International Dental Congress will be held September 1, 1904, at 8 p. m., in the Coliseum, adjoining the Congress Hall.

The price per plate will be three dollars. It is requested that all who expect to attend send their names and money to Dr. A. H. Fuller, P. O. lock box 604, St. Louis, Mo., at once—and not later than August 20th. Arrangements to pay can be made with Dr. A. H. Fuller at the time of registration, provided notice be given before August 20th.

G. A. Bowman,
A. H. Fuller,
Adam Flickinger,
Banquet Committee.

FEDERATION DENTAIRE INTERNATIONALE.

The next (fourth annual) meeting will be held in the Coliseum building, St. Louis, Mo., August 26th and 27th. The first session will convene under the Presidency of Dr. Charles Godon, at 11:00 A. M. There will be a meeting of the Executive Council on Thursday, the, at the Hotel Jefferson, at 10:00 A. M.

The Section of Education will meet at 3:00 P. M., Friday.

The Section on Hygiene and Public Dental Service, will meet at 3:00 P. M., Friday.

The Section on International Dental Press, will meet at 4:30 P. M., Friday.

THE OFFICERS OF THE SECTIONS ARE:

EDUCATION—President, Dr. T. W. Brophy; vice-presidents, Dr. E. C. Kirk, Dr. W. B. Paterson and Dr. O. Zsigmondy; secretaries, Dr. M. Roy and Dr. R. B. Weiser.

HYGIENE AND PUBLIC DENTAL SERVICE—President, Dr. W. D. Miller; vice-presidents, Dr. Cunningham, Dr. Forberg, Dr. Jenkins and Dr. Rose; secretaries, Dr. R. Heide, Dr. Sauvez and Dr. R. B. Weiser.

COMMISSION ON THE INTERNATIONAL DENTAL PRESS—President, Dr. E. Forberg; vice-president, Dr. A. W. Harlan; secrtary, Dr. E. Papot.

EXECUTIVE COUNCIL—President, Dr. Charles Godon; vice-presidents, Dr. A. W. Harlan, Dr. W. D. Miller; secretary, Dr. E. Sauvez; treasurer, Dr. F. Aguilar.

MEMBERS—Dr. George Cunningham, Dr. E. Forberg, Dr. R. B. Weiser, Dr. J. E. Grevers, Dr. F. Heide, Dr. Klingelhofer.

ON BEHALF OF THE FEDERATION,

A. W. HARLAN,
Vice-President.

1122 Broadway, New York City.

THE INTERSTATE DENTAL FRATERNITY.

The Interstate Dental Fraternity will hold its annual meeting at St. Louis, on Tuesday, August 30th. The business meeting will be at 3:00 p. m., to be followed by a banquet.

The Committee in charge are Dr. Burton Lee Thorpe, chairman; Dr. Edward Everett Haverstick and Dr. Ernest P. Dameron. Members may procure their banquet tickets in advance by remitting to Dr. E. E. Haverstick, 346 N. Boyle avenue, St. Louis.

R. M. SANGER, *National Secretary.*

AFTERMATH

PERSONAL AND MISCELLANY.

One-Half Passed.—Of the thirty-five applicants before the Washington State Examining Board, eighteen passed.

Died from Lockjaw.—Charles Myers, Evanston, Ill., had a molar tooth extracted, tetanus developed and the boy died June 24th.

An Inquiry.—A correspondent wants to know how the so-called Rose gold is manufactured. Can any of our readers give this information?

Dentist Hurt.—Dr. H. P. Magruder, New Orleans, La., was thrown from a street-car June 20th, sustaining a fractured hip and other painful injuries.

Died.—Dr. E. R. Rust, of Denver, died at Coronado Beach, Cal., June 3rd. He was a wealthy retired dentist and the owner of a fine stable of blooded horses.

Appointed Dental Examiner.—Dr. E. D. Rose, Bowling Green, Ky., has been appointed a member of the State Examining Board, by the Governor of Kentucky.

Toledo, Ohio, Dental Society.—Officers elected are: Dr. L. L. Sheffield, president; Dr. L. L. Zarbaugh, vice-president; Dr. H. B. Weller, secretary and treasurer.

Death from Tooth Extraction.—Blood poisoning resulting from having several teeth extracted six weeks ago caused the death of Adam Meyor, eighteen years of age, at Hamburg, Ind.

Lake Erie Dental Society.—Officers elected for the ensuing year are: President, J. M. Crosby, Bradford; vice-president, G. F. Bowman; secretary, V. H. McAlpine, Warren, Pa.; treasurer, J. H. Heivly, Oil City.

Died.—Dr. J. A. Marshall, Belleville, Can., died June 1st from pneumonia. Deceased, who was fifty-eight years old, was for three years an alderman, for one year president of the Ontario Dental Association and eight years a director of the Royal College of Dentistry.

National Association of Dental Faculties.—Officers elected are: President, Dr. S. W. Foster, Atlanta, Ga.; vice-president, Dr. M. W. Foster, Baltimore; secretary, J. H. Kennedy, St. Louis; treasurer, H. R. Jewett, Atlanta.

From Dentist to Preacher.—Dr. S. J. Baird, a prominent and well-to-do dentist of Warren, O., has given up his practice to preach the "New Thought" religion. He will go to Pittsburg and open a branch for the teaching of the new religion.

Half-Holiday.—The dentists of Lorain, Ohio, have decided to take a half-holiday each week. The day agreed upon was Thursday of each week and commencing Thursday, June 9th, all the offices in the city close at noon and remain closed until Friday morning.

Asks Writ Compelling Reinstatement in Dental Society.—Dr. Emory A. Bryant, who was recently expelled from the District of Columbia Dental Society, has filed a petition asking the court to issue a writ of mandamus to compel his reinstatement in the organization.

Washington State Dental Society.—Officers elected are: President, Dr. R. S. Williams, Tacoma; first vice-president, Dr. C. A. Custer, Seattle; second vice-president, Dr. J. S. Balbridge, Sedro-Woolley; secretary, Dr. J. W. Rawley, Tacoma; treasurer, Dr. J. W. Downing, Spokane.

Minnesota State Dental Association.—The following officers were elected: President, J. O. Wells, Minneapolis; vice-president, C. E. Carrott, St. Paul; secretary, G. S. Todd, Lake City; treasurer, H. M. Reid, Minneaplois; chairman executive committee, J. F. McCrea, Minneapolis; master of clinics, R. W. Berthel, St. Paul.

Oregon State Dental Association.—Officers elected are: President, Dr. Mark Hayter, of Dallas, Or.; vice-president, Dr. C. R. Templeton, of Portland; secretary and treasurer, Dr. E. G. Clark, of Portland; executive committee, Drs. Jean Cline, W. A. Cumming, N. R. Cox, M. F. Fenton, Harvey G. Sturdevant and Millard Holbrook.

Fined for Practicing Without a License.—Ellsworth Glenn, who attempted to force the Ohio State Board of Dental Examiners to grant him a license to practice and then followed his profession after the board had refused to issue it, was found guilty of practicing without a license in criminal court June 13th. Doctor Glew, of New Madison, O., was found guilty of practicing without a license and fined.

A Victory for the Dental Protective Association.—The Supreme Court of the United States has just handed down a decision reversing the trial judge (New York City) and deciding that in no patent case in an action at law can any dentist in this country be compelled, antecedent to the trial, to appear before any court official and be subjected to any questioning whatever regarding his practice or his patients.—Dental Digest.

Newly Elected Officers.—The Southern Wisconsin and Northern Illinois Dental Association closed its meeting here June 9th. Dr. E. M. Carey, of Beloit, was elected president; Dr. J. J. Wright, of Milwaukee, first vice-president; Dr. C. T. Pierce, of Janesville, second vice-president; Dr. C. W. Collver, of Clinton, secretary, and Dr. W. G. Hales, of Mineral Point, treasurer. Racine was selected as the city where the next annual session should be held.

Southern Dental Society of New Jersey.—Officers elected: President, Dr. Alphonse Irwin; corresponding secretary, Dr. C. Ironside; recording secretary, Dr. S. Ironside; executive committe, Dr. W. W. Crate, chairman; Dr. C. P. Tuttle, Dr. E. E. Bower, Dr. C. P. Tuttle, Jr. Other officers elected were: Vice-president, Dr. W. A. Jacquette; treasurer, Dr. Mary A. Morris; librarian, Dr. J. G. Halsey; executive committee, Dr. C. E. Peck, Dr. J. C. Halsey.

McLean County (Ill.) Dental Society.—Newly elected officers are: President, Dr. B. M. Van Dervoort; vice-president, Dr. G. W. Crigler; secretary, Dr. J. S. Reece; treasurer, Dr. M. D. Young; executive committee, Drs. O. J. Jarett, J. W. Kasbeer and C. P. Holland; board of censors, Drs. H. A. Stevenson, W. H. Land and A. M. Welkers. The annual banquet will be held in November, the exact date not being set. The next meeting will be held September 1st.

Practice of Dentistry in Pennsylvania by Companies or Corporations Declared Illegal.—In an opinion handed down by Judge Weiss of Dauphin County, on May 26th, 1904, in a proceeding by quo warranto against the Alba Dentists Company, it was decided that a corporation has no right to conduct the practice of dentistry in Pennsylvania, and that in so doing it was acting in violation of law, and judgment of ouster was entered excluding it from exercising its franchise in Pennsylvania.

Dental Offices Robbed.—Since our last issue, offices have been robbed in many sections. Drs. Lyman & Lyman, Topeka, Kan., loss $300; Drs. Kaulbeck & Kenney, Kansas City, loss $200; W. B. Kinney, Kansas City; R. T. Souders, Topeka, Kan., $40; Dr. Soleki, Topeka, loss $100; D. S. Husted, Oberlin, O., June 12th., loss about $15; G. B. Wortman, Massillon, O., loss $35; L. H. McDonald, Norwalk, O., loss $12; C. N. Bradford, Cincinnati, O., $75; Doctor Neidheimer, Cincinnati, $90; J. R. Johnson, Cincinnati, $75; P. H. Brown, El Paso, Tex., $200.

Warren Dental Association.—The dentists of Warren, Pa., have formed a dental society to be known as the Warren, Pa., Dental Association. The membership is open to practitioners of dentistry in good standing. Meetings are held the fourth Monday in each month, at which dental topics are discussed and light refresmhents served. All members have agreed to close their offices at 12 o'clock Saturdays from the first Saturday in April to the last Saturday in

November. The officers for the year are: President, Dr. J. T. Danforth; vice-president, Dr. V. H. McAlpin; secretary and treasurer, Dr. E. C. Thompson.

How a Vermonter Described His Mouth.—John S. Sargent, the noted painter, was saying that the late Doctor Evans, the American dentist of Paris, had once shown him all his curios. "Among these curios," said Mr. Sargent, "there was a letter that amused me greatly. Doctor Evans had received the letter in his youth in America. It was from a young farmer of Vermont who wanted a set of false teeth made and sent to him. He wrote for the teeth in some such way as this: 'My mouth is three inches acrost, five-eighth inches threw the jaw. Some hummocky on the edge. Shaped like a hoss shew, toe forard. If you want me to be more particular I shall have to come thar.'"

State Law Upheld.—The Supreme Court has affirmed the decision of the Spokane County Superior Court in the cases of T. A. Parsons, F. M. Stine, the New York Dental Company, Charles Spencer and T. Haven White. The parties were engaged in the practice of dentistry in Spokane, and it was charged that they were practicing without having complied with the law. When arraigned in the Superior Court they all pleaded guilty and were sentenced to pay fines of $50 each. They then appealed, on the ground that the State law was unconstitutional. The Supreme Court has now decided that the conviction and sentence were proper, thus practically sustaining the law.

Deputy Great Sachem.—Dr. C. E. Whitesides, of Paducah, Ky., has been honored by the appointment as Deputy Great Sachem of Kentucky by Mr. H. H. Denhardt, of Bowling Green, who was elected to the office of Great Sachem of the State by the Red Men at the big meeting here a few weeks ago. The Great Sachem is allowed five deputies and Doctor Whitesides received his commission as one of them. The counties Doctor Whitesides has authority over are Ballard, Carlisle, Hickman, Fulton, McCracken, Graves, Livingston, Marshall, Calloway, Logan, Crittenden, Lyon, Caldwell, Trigg, Union, Henderson, Webster, Hopkins, Christian, Daviess, McLean, Ohio, Muhlenberg, Todd, Hancock and Butler.

Just Married.—Dr. Frank Finley, Chicago, Ill., to Miss Clara Morton, of Kenosha, Wis.; J. F. Meyer, New Albany, Ind., to Miss Bertha M. Fiscus, Indianapolis; H. G. Stalnaker, Logansport, Ind., to Miss Josephine Ruhl, Logansport; George Wing, Ferndale, Cal., to Miss Elizabeth Schoff, Columbus, O.; J. E. Northcut, St. Louis, to Miss Martha Brown, Benton City; C. C. Dobbs, Minneapolis, Minn., to Miss Alice Erwin; E. A. Grall, Loudonville, O., to Miss Corinne Herzog, Loudonville; C. H. Davis, Albion, N. Y., to Miss Mabel Wilcox, of Albion; V. E. Herbert, Alta, Iowa, to Miss Emma Rawn, of Alta; T. J. Sedalia, Mo., to Miss Minta Mauzy, Kansas City, Mo.;

W. H. Webright, Huntington, Ind., to Miss Mora Keys, of Winnemeg, Ind.; Robert Wakefield, Cranford, N. J., to Miss Minnie G. Fisher.

Supernumerary Teeth.—I was talking recently with a veterinarian, who told me of something that was a surprise, and may be of interest to some of my professional brothers, so I will relate it:

While the aforesaid "Hoss Doctor" was dissecting the head of a hog, he found at the angle of the jaw a sac, which on opening, he took out over 50 teeth of all sorts and sizes; said the sac was not attached to the periosteum, but was wholly outside of it. He also informed me that this was not an uncommon condition of affairs to find in the hog. He called it merely a case of supernumerary teeth.

It might be well for our Cincinnati brethren, the next time they buy hogs' heads for head-cheese, to investigate this matter.

E. H. Raffensperger, D. D. S., Marion, O.

Waterville Dental Society.—The Waterville Dental Society was formed in May, 1903, for the purpose of mutual benefit and advancement of its members in their profession. It had its first meeting for organization at the Elmwood, and since that time has met on the first Friday of each month.

Each meeting a paper has been read and discussions held, which have proved very beneficial. Several excursions and banquets have been on the program where the ladies participated and a general good time was the result. In May, 1904, the society celebrated its first annual by going, accompanied by the wives and best girls, to East Vasselboro, to one of Mine Host Bradley's famous chicken dinners, which was enjoyed after an eighteen-mile sail around the beautiful China Lake on Captain Butterfield's steam launch—and voted a perfect day and perfect time.

The officers are: President, Dr. E. H. Kidder; vice-president, Dr. M. D. Johnson; secretary, Dr. Guy Smith; directors, Dr. E. L. Jones, Dr. H. E. Toward, Dr. H. W. Mitchell.

[The above was sent to us for publication. Perhaps all our readers know where Waterville is, but the notice does not give the information, nor was it accompanied by one of the "famous chicken dinners" for ye editor, but we are pleased to give the information just the same.—Editor.]

Dental Journal Exchange.—In view of the fact that we have some ten or twelve thousand duplicate dental journals in our library, we wrote some time ago to a few dental schools that we know were building up libraries, asking them to join with us in the organization of a Dental Journal Clearing House, through which we might exchange duplicate copies of our dental journals. The scheme has met with general approval, and we are already assured of many thousands of duplicate journals for exchange.

The plan is this: Each member will send in a list of journals wanted to complete files, also a list of duplicates on hand. When all of these lists are in, it will be the endeavor to use the lists of duplicates to fill out the list of journals wanted as far as possible for the mutual benefit of all. Notices will then be sent to each member, stating what can be furnished and what duplicates are wanted from each library. This clearing house is not for the sale or purchase of any books or journals, but only for the free exchange of duplicates.

To make the work of clearing as easy as possible, we will furnish you with blank sheets to use in making up lists, so that all will be uniform. A. D. BLACK, *Chairman.*

31 Washington St., Chicago.

Committee appointed by Faculty Northwestern University Dental School.

[The above is open to members of the profession and assistance is asked from all.—Editor.]

The Philippine Government Exposition at the World's Fair.—The Philippine Government Exposition is the largest single exhibit at the World's Fair. The Philippine Exposition combines a scientific interest for students of politics, civilization, economics and ethnology with popular features which surpass in vital human interest any of the Oriental groups shown in other parts of the grounds.

It shows the grades in civilization from the diminutive Negrito, who is only a step removed from the "missing link," through the dog-eating and head-hunting Bontoc, and the Moro, who is now causing most of the trouble in the Islands, to the Scout, who is a regular in the United States Army, and the Visayan, who weaves fabrics of great beauty. One has only to visit these natives and watch their tribal dances, to study the men and women at work, or witness a dog-feast, to realize their primitive character, and then to pass on to the Constabulary—the beginning of the Army of the Philippines—representatives of many tribes hostile to each other, but brought together and harmonized by the uniform they wear and the flag they salute.

The Philippine Exposition was organized to show what has been done, and what is being done, in the Islands. It is an educational exhibit from beginning to end, and something everyone should see. Make your arrangements to attend the Dental Congress in St. Louis, August 29th to September 3d, then spend a week or two at the World's Fair Grounds. A more profitable vacation cannot be taken.

Free Dental Clinic.—A free dental clinic has been established at New Haven, Conn. The clinic furnishes the dental profession in New Haven an opportunity to perform charitable work for the worthy poor who are unable to make any compensation for such service. While the medical profession has been doing much work in this line for years, the opportunity has not been presented to render free dental service except in a very limited degree in private practice.

Public service is now recognized as a necessity, and the dentists are ready to meet it.

A few months ago, at the solicitation of the medical men connected with the dispensary, the matter of conducting a free dental clinic was presented to and discussed by the New Haven Dental Society, resulting in nearly a unanimous vote to accept the proposition. Dr. William H. Carmalt, director of the surgical clinic, appointed Dr. Edward S. Gaylord, of this city, chief of the dental clinic, and through his efforts, assisted by Dr. George E. Nettleton, the room at the dispensary has been equipped with all the latest improved appliances and instruments required, the chairs, spittoons and bracket-tables having to be made especially, white enameled, as required for all modern equipped hospitals, electricity furnishing the motive power for two dental engines.

The dentists have been enabled to establish this public clinic through the liberality of three public-spirited citizens, Clarence R. Hooker, Miss Elizabeth R. Hooker and Donald R. Hooker, all children of the late Frank H. Hooker.

The clinics are held two afternoons a week. The operators (two in number each day) are appointed by the director, Doctor Gaylord, six months in advance, so each man is prepared to be prompt in attendance, and with the number who have expressed a willingness to give their services four half days for each operator during the six months will be required. Should a greater number of patients present themselves than can be properly cared for in two afternoons more time will be designated and additional operators assigned.

The card system of keeping record is adopted, and every operation can be referred to at any future time by number, name and residence of the patient; also name of the operator, so that an interesting record for the year is anticipated by the dentists who consider themselves pioneers in this work for the New England States.

Recent Patents of Interest to Dentists.—

762289—Crown tooth, Frank H. Davis, Chicago, Ill.

760397—Dentifrice, Edward C. Kirk, Lansdowne, Pa.

762086—Dental chair, Frank Ritter, Rochester, N. Y.

760943—Dental manikin, Edward P. Wright, Richmond, Va.

761193—Tooth-brush, Adolph F. Blanchard, Brooklyn, N. Y.

761155—Making dental plates, Lucien Eilertsen, Paris, France.

760578—Toothpick holder, Conrad P. Steinmetz, Mitchell, S. D.

761273—Dental mouth-mirror, Robert Walker, New York, N. Y.

760800—Rubber dam holder and cutter, Frank R. Nice, Lansing, Mich.

760050—Dental swaging machine, George B. Wortman, Massillon, Ohio.

760295—Obtaining correct dental impressions, Willis E. Allen, Honolulu, Hawaii.

Copies of above patents may be obtained for ten cents each by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

DENTAL COLLEGE TEACHERS' CONTRIBUTIONS

CAVITY PREPARATION FOR PORCELAIN INLAYS.

BY H. M. SEMANS, A. M., D. D. S., COLUMBUS, OHIO.

Professor of Clinical Dentistry, Ohio Medical University, Columbus, Ohio.

A cavity without undercuts. Such to most practitioners of dentistry a few years ago would have passed all right for porcelain fillings. A cavity otherwise prepared for gold or amalgam

No. 1

with overhanging ledges and undercuts strictly left out would have done in the minds of many very well. But to-day it is well understood by all that cavities for inlays occupy a class by themselves. Experience in the right preparation for this comparatively new esthetic material has taught principles not found in the manipulation of other methods. The avoidance of undercutting

is still very essential, but to-day we realize that inlay strength and retention make their own peculiar claim for a separate style of cavity, as compared to all others.

No. 2

No. 3

At the first departure, or rather at the beginning, of this new cavity style, flat bases and marginal right-angles seemed to suffice. Then came well-placed grooves and shoulders both to resist masticatory stress and to withstand leverage from whatever source. Platinum pins and posts have been tried, and while not altogether found wanting, still there are many good reasons for the avoidance of the use of them in most cases. Cavity preparation for pinned inlays might well be a subject given distinct from that of cavity preparation for porcelain fillings. A perfect

No. 4

union always being desired, incline planes have lately been advocated, avoiding thereby the square box effect and the showing of cement at the margins. Thus we have progress along right lines, even glittering generalities and unique unsubstantial ideas helping to show how to find and follow the one narrow true path.

I believe it to be an excellent plan for all who take up porcelain filling to work out cavity methods in small plaster casts. All the new ideas and varieties may be worked out upon these models. Using No. 40 tin-foil for the matrix, and plaster for the inlays, you soon have models of both filling and cavity. "Many men of

many minds" are at work to-day and original ideas, good, bad, and indifferent, are being promulgated. A soap or modeling composition tooth about three inches in length would soon give a plaster

No. 5

No. 6

cast from which any number of plaster models may be obtained. Working with such a model would soon make plain and lasting

a description or picture perhaps soon forgotten. Otherwise by application of new methods directly to cases in the mouth we have bewildering attempts and oftentimes sad results.

In cavity preparation for porcelain we must strive for two things: retention and avoidance of fracture. In avoidance of fracture I refer to both tooth structure and inlay. Theoretically, at least, we get almost absolute retention with perfect mechanical union. To illustrate: A broken china plate repaired with the space between the two parts occupied by a bulk of cement is a weak vessel. Bring the parts together under pressure with almost no material staying between, and as shown by the street seller

No. 7

of china-ware cements, such a repaired vessel will stand hundreds of pounds of weight. Yet cold, hard experience has taught us, should there be the least strain or leverage, not to rely upon attempts at a perfect union of only two flat walls.

In these illustrations I have attempted, with a few examples, to show in what direction cavities for porcelain fillings have progressed, and I trust that they may have descriptive power enough so that, with a few words of guidance and explanation, they may be understood. It is my desire to show the trend of ideas constantly being advanced.

No. 1 is familiar to all. Given a flat floor and very slightly sloping walls and we have the simple cavity upon labial and buccal

surfaces Such a cavity allows the settlement of its inlay to a degree of perfection of fit only limited by the amount of cement

No. 8

No. 9

which refuses to squeeze out. Free from all strain, this seconds the street-fakir's illustration of mended strength.

In No. 2 we find a common condition. A proximal cavity with both lingual and labial sides somewhat involved. Because of masticatory stress from the lingual side, the cavity should be prepared wider at the lingual than at the labial side, thus allowing the labial bulk of the tooth to withstand the strain from the lingual side. To aid in this, a labial grove may be made, or by having the lingual and center part of the pulpal wall cut deeper than the labial, a shoulder could be provided. The gingival wall of the cavity should be very nearly at right-angles with the outside surface, allowing the incisal wall to be governed as to its

No. 10

slope or incline to the pulpal wall by the strength or lack of strong tooth material in that direction.

Jumping to No. 12 is found a condition upon proximal surfaces involving either labial or lingual sides. One or the other side alone. If the intact side warrants it by its strength, procedure as in the illustration will give a flat lingual floor, gingival wall at right-angles to surface, therefore also flat, pulpal wall at right-angles to both, and the incisal wall an incline plane. The inlay will settle into place to the extent that the cement will allow. Thus is put into use the incline plane as lately very scientifically illustrated by Doctors Eisen and Cudworth,

In Nos 3 and 4 are illustrated the proximo-incisal cavity of two different methods. In No. 3 we have a flat gingival floor

No. 11

No. 12

still, with the floor inclining gingivally as it approaches the inner wall, grooves are made in the inner or pulpal wall labially and

lingually, aiding very materially against strain of mastication because of the bulky ridge presented in the center of the tooth from incisal edge to gingival floor. Grooves may also be made upon the gingival floor. No. 8 shows the same with only the lingual groove; in this case a gingival groove should have been presented. In No. 4 the proximo-lingual swelling of the gingival part of the tooth is taken advantage of to allow a boxing-in effect. In these two (Nos. 3 and 4) are shown, in one the sharp corner, in the other the rounding corner. No. 5 shows the possibility of a

No. 13

proximo-incisal cavity with the gingivo-labial side involved. If because of lack of separation room difficulty is met with, then two separate cavities might be called for.

No. 6 presents the proximo-occlusal cavity of the bicuspids and molars. Two things here must be avoided, weakening of buccal and lingual walls, and the slanting up of the inlay bucco-occlusally or linguo-occlusally to meet the convexity of the cusps. It is a very easy matter to make the inlay of shallow bulk at those particular places and it should not be done. No. 7 illustrates another possibility.

If the pulp does not allow much removal toward it, an approaching of it may be avoided, as shown in Nos. 9 and 10, by

means of the step. The step should slope slightly toward the gingival side, from its proximal aspect to the inner wall. Grooves may be placed at discretion.

Cavities involving incisal edges (No 13) may be nicely repaired with very slightly-sloping mesial and distal walls, the lingual aspect wider than the labial. The floor may be deepened on the lingual side to any extent not involving the pulp, thus giving a labial shoulder as in the illustration; or a groove may be used from mesial to distal side through the center.

No. 14

No. 14 shows a condition that might be of a desired esthetical nature, but its practicabilty may soon be smashed by mastication. In the two illustrations of No. 15 I have attempted to show how occlusal cavities in molars or bicuspids should be prepared to give proper edge strength to their inlays. I don't mean that small cavities should be enlarged as per illustration, but I do mean that if you desire to avoid fractured edges, better meet the cusps fair and square at the top of convexity rather than half way.

In No. 16 is shown a broken-off corner of a central incisor in which the cavity presents an inclined gingival floor from the proximal side with a labial shoulder. This inlay was placed in the left superior central incisor, mesial corner, for a patient on

April 24, 1900, and to-day shows but a slight line of demarkation between tooth and inlay.

In the proper use of the proper instruments in preparing these cavities, the individual dentist's degree of manipulative skill and discernment of what's what, will aid or retard his successful endeavors. Many, because of the daily use of a certain few instruments, seem to get along fairly well in all branches of dental art with these few; the infrequent use of many very useful and

No. 15

essential instruments soon allows them to pass away from the remembrance of possession. We all delight to tell of some practitioner of our earlier acquaintance who would clear the mouth from side to side, above and below, with one favorite pair of forceps; of another who prepared cavities and filled the same with gold fillings, which after many, many years of wear and tear are still doing good service either in this world or the next, and all this with a very small handfull of instruments Such examples simply go to show the quintessence of manipulative skill, and is not unlike the beautiful bone images with which prisoners of war were wont to beguile away the long, tedious hours, using often but an improvised knife made from a broken piece of iron. Chisels, excavators, burs, gem-stones, disks, abrasive wheels, all

have their place for use just as well in this class of work as in the others.

I well remember an old carpenter in my native town coming in upon an apprentice who was slowly, painstakingly turning out cornices. "Let your think get all over this shop and its contents for five minutes without a lick of work and then go ahead," said he to the apprentice, "and you will turn them cornices out a hull durn sight quicker and better."

Discernment in porcelain filling is most essential for lasting results. By some enthusiasts it may be considered a broad statement, but I believe in the whole category of teeth cavities and

No. 16

filling material, porcelain inlay is still but an equal partner with gold and amalgam. The estheticism of porcelain is ideal; so is that of the cloistered monk. Practicability and estheticism should be well mixed in your mind as each case presents itself. Which is it? Porcelain, gold or amalgam? Porcelain, you decide. Why? Because porcelain in this case is practical. Perhaps in the next case it is not so. Just as the estheticism of the cloistered monk lacks much good result to humanity, so porcelain estheticism alone, lacks.

Discretion, clear-headed judgment, and manipulative ability in equal parts, well shaken by experience, will produce good results in porcelain fillings.

USE OF THE FURNACE IN SOLDERING FACING TO POST IN MAKING PORCELAIN CROWNS.

BY C. V. VIGNES, D. D. S., NEW ORELANS, LA.

Professor of Prosthetic Dentistry and Metallurgy, New Orleans College of Dentistry.

In the construction of a durable porcelain crown, the most difficult, as well as the most essential, part of the work, rests in the attachment of the pins of the facing used to the extending post of the frame in a secure and permanent manner, before adding the porcelain and baking.

The usual system employed to carry out this most important step is to adjust the facing in its proper relation to the adjoining teeth and to the platinum frame and its pins to the projecting post, waxing in position, investing, and then soldering the parts together by the use of the blowpipe.

In doing this, besides consuming much valuable time and running the usual risks of "checking" the facing, we increase the chances of its discoloration by heating it while it is in contact with the investment material.

By using the furnace—either electric or gasoline—in soldering these parts together, the work is greatly simplified and becomes in reality the easiest step in the construction of the crown. No investment is required, no risks are run as to "checking" or discoloration, only a few minutes are necessary in which to do the soldering, and the ultimate results are as gratifying as if the tedious, uncertain and difficult procedure had obtained.

To successfully use the furnace for soldering, the only accessories necessary are a pair of long soldering tweezers and suitable slabs and stands with perforations, in which to insert the post of the crown to be soldered so as to place it in the furnace in proper position for soldering.

When the electric furnace is used, a piece of fire-clay, pyramidal in form, with a hole in the center, is the most convenient and safest.

With the gasoline furnace, it is preferable to drill small holes for the reception of the post of the crown in the ends of the nickel slab that usually accompanies the furnace.

The facing is adjusted in its proper relation, with its pins on either end of the extending post. It is then held with one

hand in position, while with the other hand, using a pair of small pliers, the pins are pressed to the post with sufficient force to hold the facing in position on the frame while it is being handled and soldered. (See Fig. 1).

The case is then removed from the mouth (or from the cast), inserted in the stand and placed in the furnace, with the lingual aspect facing the opening on the furnace.

The heat is then applied. When the baking point is reached, a small pellet of gold is placed, by means of the long soldering

Fig. 1

Fig. 2

tweezers, at the point to be soldered The pellet of gold will adhere immediately to the platinum, and melting, will solder the parts together. (See Fig. 2).

By this method, pure gold, instead of platinum solder, can be safely used in this class of work Not only can pure gold be used for soldering the pins of the facing to the post, but it can be used for soldering the band and the cap, and soldering the post to the cap as well.

In the use of pure gold as solder for platinum, however, it is necessary not only to have the gold flow and catch the parts together, but to supply sufficient heat to cause perfect soldering of parts—to form, as it were, an alloy of gold and platinum at the points of contact.

This can be done readily by the use of the automatic gas blowpipe.

INVISIBLE ATTACHMENTS FOR BRIDGE-WORK.

BY H. V. COTTRELL, D. D. S., COLUMBUS, OHIO.

Professor of Prosthetic Dentistry, Ohio Medical University, Columbus, Ohio.

The highest art in the work of the dentist lies in the concealment of the artificial. If there is an attempt made to carry out this principle at all, it is too often done at the expense of utility.

For example: a bridge is to be constructed, using the cuspid and first molar teeth for abutments. Both are sound teeth. Certainly we must exclude the use of the gold crown for the cuspid at least. The molar may bear it or not, as the circumstances indicate. The Richmond necessitates the destruction of the crown

Fig. 1 Fig. 2 Fig. 3 Fig. 4

of the tooth; it makes possible the fracture of one more facing; in its use there is a chance of not securing a harmonious shade of porcelain in the completed crown, its strength is certainly not equal to that of the natural tooth.

The porcelain has its adherents, but it requires the same wanton destruction of the crown of the tooth as does the Richmond.

Such a case as above suggested presented in my office. The patient was a lady. The molar tooth had moved mesially the width of one bicuspid. In this position it was found to be conspicuous. The patient did not wish the appearance of gold if it could be avoided.

I devitalized the cuspid and fitted a square post into the canal, then ground from the palatal surface to a depth sufficient to give the required strength to the finished piece. The periphery of this ground surface was made regular in its outline. It ex-

tended from the mesial surface to such a point on the distal as would bring it in contact with the edge of the backing of the dummy which was to fill the space, and from under the free margin of the gum to the incisal edge. The entrance to the canal was slightly countersunk

Over this ground surface was adapted approximately pure gold plate of 30-gauge. The post pierced it while in position on

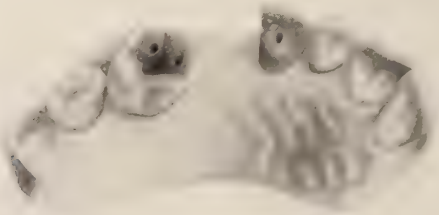


Fig. 5

the tooth. A bit of beeswax was pushed over the extruding end of the post and into contact with the gold; the two were gently withdrawn and laid on some loose asbestos fibre preparatory to soldering. After soldering, the piece was returned to the mouth and perfect adaptation secured by the use of burnishers and a

Fig. 6

light blow from an automatic mallet. The gold was made sufficiently large to slightly overlap the edge of the ground surface. This surface was ground in such a manner as to make it possible to withdraw the backing at this stage without in the least distorting it. The piece is shown in Fig. 1.

It was then invested and reinforced with solder the extent to which the tooth had been ground. It was then made into such shape as the occlusion required (Fig. 2).

The mesial surface of the molar was ground in such a manner as to make it parallel with the canal of the cuspid. The occlusal surface was ground as far distally as the oblique ridge, and from buccal surface to palatal surface.

Three holes were drilled in this surface to admit as many 20-gauge pins. These holes were made parallel with each other

Fig. 7

and with the canal in the cuspid. This was quite easily accomplished by having first inserted a very long post into the cuspid

Fig. 8

canal. This was allowed to remain in position while the preparation of the molar was being accomplished. It was a serviceable guide to the placement of the bur. The extent of the grinding of both abutments shown in Fig. 5.

Over the ground surface of the molar was adapted pure gold of 30-gauge, and three iridio-platinum pins of 20-gauge were made to pierce it (Fig. 3) in the same manner as described in

the construction of the cuspid backing After being reinforced and ground to the required occlusion, this saddle (Fig. 4) and the cuspid backing (Fig. 2) were inserted into the mouth in their respective positions and the case proceeded with as in the construction of any other bridge. To overcome the slightest amount of shrinkage in soldering, an iridio-platinum bar was fitted abutting the anchorages. Fig. 6 shows the finished piece. Fig. 7 shows the occlusal surface when in position in the mouth. Fig. 8 is as it appears in the mouth from the buccal aspect.

When the cement had set, I ground and burnished the periphery of each anchorage as carefully as I would the edge of a gold filling. Hence no cement line is visible. The saddle used on the molar may be as successfully applied to bicuspids by using but two pins.

This principle has been used for several years by others, and in my own hands it has afforded an excellent means of anchorage. Being without the unsightly appearance of gold, I find it much appreciated by my clientele.

DENTAL BOARD EXAMINERS' CONTRIBUTIONS

UNNECESSARY DISPLAY OF GOLD.

BY E. P. BEADLES, D. D. S., DANVILLE, VA.

Member of the Virginia State Board of Dental Examiners.

"The concealment of art is the highest art." This is trite, but cannot be too much impressed upon the members of our profession. Vulgar display. It is unprofessional, unethical and unrefined. Unfortunately there are many people who rather like to show a gold filling or even a gold tooth, and there are men who are willing to lower dentistry by lending their skill to such demands. Refined people abhor it; but many unrefined people need the services of a dentist, and we should insist upon doing the right, regardless of their desires in the matter.

Many years ago, soon after beginning practice, I remarked in the presence of a well-known dentist that I refused to extract teeth unless they really needed removing. He replied by saying, "you will soon get over that." This was a shock, coming from such a source, nor have I "gotten over" it. No man should lower his dignity nor that of his profession by doing a thing against his judgment and against his good taste, because of the demand of a patient who has neither judgment nor good taste.

"Extension for prevention" is often given as an excuse to make a display of gold in the anterior teeth. Some men have the trade instinct of advertising so firmly embedded in their natures that they are willing to sacrifice every principle of ethical dentistry to gratify this inclination, though they never go into the public prints. The profession of dentistry occupies a most peculiar position. It is partly an art, partly a science, and partly a trade. The art and science predominate, hence, when in the hands of our best men, is rightly regarded as a learned profession. A professional man has, first, the good of the public at

heart; the remuneration being a secondary consideration. A tradesman's first object is the money he makes; the good of the public a secondary consideration. Hence a calling is a profession or trade as one or the other of these principles predominate. Who can say which class is in the majority in dentistry?

Our schools can greatly help along these lines. A student has not considered these matters and will be influenced by which-

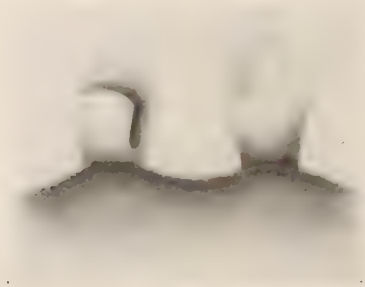


Fig. 1

ever class he comes in contact with after graduating; his teachers can start him in the right direction, provided they are right themselves. Alas! many are not.

I repeat, it is vulgar and unprofessional to make a display of gold. Our patients are finding this out, hence in many places only servant girls and lewd women are seen with gold incisors, laterals

Fig. 2

or cuspids With the advent of porcelain, there is little or no excuse even for so much yellow metal display as a filling.

The insertion of a single tooth, anterior to second bicuspid with no gold to show, has been a difficult problem; *i. e.*, until that wizard in dentistry, Dr. C. L. Alexander, thought of the groove system. As this plan is not in general use, the following is my method, which I hope will be of benefit to some: A simple case

would be the replacing of a lost first bicuspid, using the second bicuspid as a support. The inner cusp of the second bicuspid is ground off and the tooth paralleled antero-posterially. A small groove is then made down to gum margin on each side, opposite the bifurcation (see Fig. 1), using a bur or fissure-drill. A thin piece of gold or platinum is then bent around the tooth loosely. Platinum is preferable, as there will be no danger of melting down the thin edges in soldering. The band is caught on the labial surface with a little twenty-karat solder or pure gold, and replaced, being burnished into the grooves. Some skill and judgment is necessary to know how much "slack" should be allowed, as just enough should be left to allow the band to fit

Fig. 3

snugly when it has been burnished into the grooves. The band is then covered with solder on three sides, at the same time filling the grooves in band corresponding to grooves made in the tooth. After proper trimming, a cusp is made and the labial surface cut out. (See Fig. 2). This half-band should then slip on and off easily. An impression is taken and the procedure is as for any other case. Fig. 3 shows the lingual surface of bridge when in place, and Fig. 4 shows the appearance of the bridge from the labial surface. If no danger of breakage by occlusion, a saddle-back tooth may be used, otherwise a facing should be backed up, allowing solder to come well down to cutting edge in order to prevent splitting off. In all bridges, where the attachment is made to the first or even second bicuspid, this method will be found best. It is easily kept clean, and destruction of the tooth much less liable than with open-face crowns. It may also be used in attaching to cuspids, though I am of the opinion that in these

teeth a post in the root is best, unless it is especially desirable to retain the vitality of the pulp.

I have heard that some dentists do not insert metal fillings anterior to the second molars. This is not good judgment, though their desire to prevent display and disfiguration are to be commended. Very small cavities should be filled with gold, the medium and large cavities, as far as possible, with porcelain. Every filling material has its place, and good sense and good taste should dictate the use of each.

Fig. 4

It is a great comfort, to both patient and operator, to be able, where the ravages of disease have left the teeth unsightly, to restore them to their original appearance by an art which is not only concealed, but with conditions scientifically produced which render recurrence of disease less liable than by any other method. Porcelain inlay-work will not do everything, but it will do much, properly used.

PORCELAIN BICUSPID AND MOLAR CROWNS.

BY C. B. BRATT, D. D. S., ALLEGHENY, PA.

Member of the Pennsylvania State Board of Dental Examiners.

After having tried numerous methods in the making and adapting of porcelain crowns for bicuspid and molar roots, I have for the last two years adopted the method which seems to me to partake of the best and principal parts of them all where a fixed dowel is to be used After having prepared the root as for a Logan crown, by cutting down to a level or below the margin of the gum, I bevel the margin of the root sufficiently to

allow for the thickness or bulk of my porcelain between the root and the gum (Fig. 1). I now consider the size post that I am to use, always using as thick a post as in my judgment the root will accommodate without materially weakening it; and for this purpose there is nothing in my judgment equal to the iridio-platinum square wire, about fifteen gauge, although in some cases I may

Fig. 1

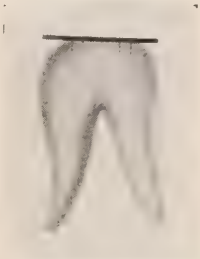


Fig. 2

use it lighter by filing down and tapering it very slightly. I then select my drill the size to drill into the root or roots so that when the pin is tried in it will bind, then cut off pin, leaving it of sufficient length to be embedded in the porcelain crown, noting the

Fig. 3

Fig. 4

Fig. 5

occlusion at this time. I then take platinum plate, about thirty-two gauge, and cut and shape about like the end of the root, taking care to allow enough overlap so that when the rim is turned on it it will reach down to the part of bevel toward the apex of root (Fig. 2). I now place it over the root and press well to place with the finger; then judging where I have drilled my holes, I take a fine-pointed straight instrument and punch or perforate a

hole through the platinum directly into the holes in the roots (Fig. 3.) The holes in the roots where two or more pins are to be used need not be drilled at direct angles with the canals, as the depth need not be sufficient to endanger drilling through the sides of roots and at the same time the holes can cross the angles of the canals and still be parallel with each other. After perforating the platinum plate, take the pins that have been adapted to their respective roots and with the platinum still in place, force through the openings in the platinum that are smaller than the pins and press to place in the openings in the roots (Fig. 4). In many cases the platinum plate and pins can be gently coaxed off the roots, still remaining in their relative positions with each other

Fig. 6

Fig. 7

(Fig. 5), and laid on the soldering block and with the minute quantity of platinum solder or pure gold soldered together, using a very high blowpipe flame to cause them to fuse and flow as much as is possible with the minimum amount of solder that has been used. The object in this being that there will be no further flow of the soldering material when fusing the porcelain. If there should be any fear of moving or displacing the pins in drawing them and the platinum plate from the roots, press modeling compound or stiff wax on (Fig. 6), as in an impression, then cool and remove compound or wax (Fig. 7); then take out the pins and plate and put to place in the impression and invest in silex and plaster or any investment material, and when set, melt off the impression material, and solder. Then place back on the roots, causing them to go well to place and bind same. Now with a

flat-faced plugger, mallet gently on the platinum plate just over the margin of root and you will get the turning point of the platinum cap, the rim of which can be pressed over the bevel of the root with foot-pluggers so as to get the general shape; then remove and with round-nosed pliers turn down the rim and work

Fig. 8

Fig. 9

the creases out. This can be done without leaving any buckle in the rim; replace on the root and the rim or band part of the cap should be a little small to go to place (Fig. 8), but with a little alternate tapping on the pins and gentle pressure around the cap just over the band it will spread out and conform to the bevel and shape of the root (Fig 9). You now have your foundation and fitting finished and are ready for the next step, which is articulation. With your cap and pins in place on the root, take bite, then

Fig. 10

an impression with compound or good stiff wax, being sure to get an impression of the tooth on either side of the one to be made, and if the cap and pins do not draw out with the impression they can be taken off the root and put to place in it; then with wax spatula flow a very thin film of wax over the pins and pour your

cast of plaster, and when warming your cast to get impression off you will find that the cap can also be readily removed, the thin film of wax on the pins releasing them You now replace cap and make articulation on small articulator and you are ready to proceed with the porcelain part of the operation. So remove

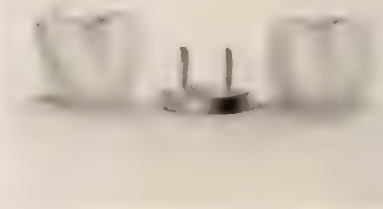


Fig. 11

cap and with a very sharp pocket-knife saw gently over the edge of the rim, directing the blade of the knife almost parallel with the bevel of the rim, causing a roughness or series of spurs to be produced on the fine edge of rim (Fig. 10). This will have a remarkable effect in preventing the sealing or separating of the porcelain and platinum at this very thin edge. Place cap back on model (Fig. 11), cut away that portion representing the gum to a depth a line or more below the edge of the rim of platinum cap.

Fig. 12

This trimming of model is to allow for shrinkage and to be able to try tooth on model before baking of the porcelain, which will be explained later. You now notice occlusion of the articulated model. Remove cap with two or more thicknesses of blotting paper bent around the cap so that you can hold it with thumb and finger just firm enough not to bend the thin platinum rim, leaving the lingual side exposed. Lift your porcelain on your spatula mixed

to about the consistency of cream and build up on your cap, which is still held by the finger and thumb of your left hand, until you have a block of unfused porcelain large enough from which you can carve your tooth. This porcelain, which is to be the body or foundation, I make of Brewster's high-fusing foundation, and carve to just fill the space between the adjoining teeth and also occlude with the articulated ones when set back on the model. Having now carved your tooth from the above block from which the blotting paper absorbed sufficient moisture almost as fast as

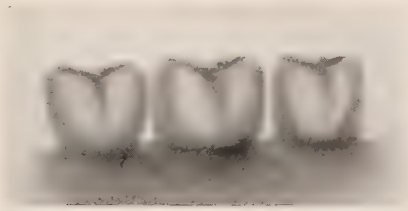


Fig. 13

you applied it, remove and fuse. You will then find its shrinkage has been about one-seventh from what it was when you carved it. You now trim the approximal surface of each adjoining tooth slightly and also a little from the occluding plaster tooth and using a lower-fusing material such as Ash's low-fusing, you hold the partly finished tooth by one of the dowels in a pair of pliers and proceed to apply the porcelain for producing your shade and enamel, which can be done by blending the various shades on the tooth and taking care to have the material slightly thickened at the very edge of the rim, as you will have a greater proportion of shrinkage and bleaching here than at any part; and by again fusing, you should have a finished tooth (Fig. 12) ready to be inserted (Fig. 13).

REGULAR CONTRIBUTIONS

SOME SUGGESTIONS IN DENTAL PROSTHESIS.

RETENTION OF ARTIFICIAL DENTURES.

BY GEORGE H. WILSON, D. D. S., CLEVELAND, OHIO.

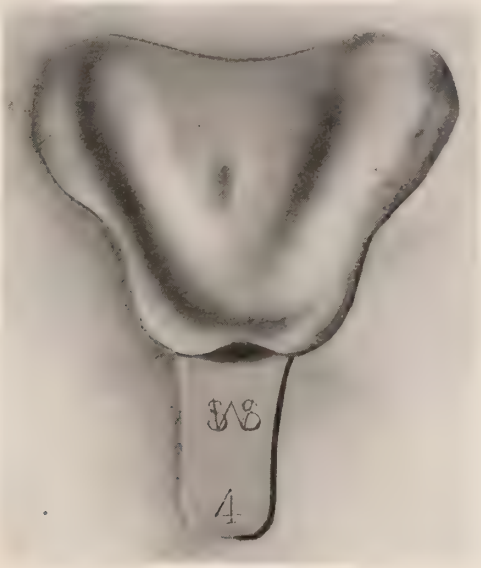
(FIRST PAPER)

SYNOPSIS: This subject will be consideerd in two sections; foundation, and superstructure. The foundation consists of an accurately-taken impression, and a properly-formed cast. The superstructure will include the observance of the physical laws involved, and the mechanism. Adhesion, atmospheric pressure, and leverage, are the means by which all substitutes are retained in the mouth. Under the heading, adhesion, will be considered the adhesions by contact and moisture, and contact as the result of the flexibility of the materials used. This subdivision will include spring-clasps, stay-clasps, ferrules, spring-plates, and spiral springs. Leverage will be discussed as positive and negative forces.

IMPRESSIONS: For the best results in constructing any plate denture, it is absolutely necessary to have an accurate impression. It is equally true that plaster is the only material suitable for taking impressions of the mouth. I regret that I have not the ability to convince all dentists of this *truism.* All concede that plaster takes the best impression in certain places Why? Because it is soft and adapts itself perfectly; is inelastic and becomes rigid. If a material is the best for the accessible places, and the only objection is its fixedness in the difficult ones, and another material is objectionable in the simple cases because of its toughness and lack of rigidness, then it follows as good logic that the more inaccessible the part to be impressed, the more essential it is to use the soft, inelastic and rigid-forming material. It is only a question of the operator's confidence in self, and dexterity.

PROPERTIES OF PLASTER: Plaster of Paris is gypsum $CaSO_4+2H_2O$, heated not to exceed 127° C or 261° F and ground to a fine powder; which again becomes hard by crystallization upon the addition of water. The plaster as furnished by the various producers has different properties as the result of impurities in the original rock and the processes of the manufacturer.

FRENCH'S PLASTER: The writer considers French's regular dental plaster as the most suitable for taking impressions. While all plasters expand, this brand is practically non-expanding when



Cut No. I

properly manipulated. It is fine-grained, mixes smooth, is quick-setting and sufficiently strong for many other laboratory purposes. By the addition of a salt, sodium chloride or potassium sulphate, the setting can be hastened at the will of the operator. These salts weaken the plaster, which is an advantage in impression taking, as the material is more easily broken in removing from heavy undercuts, and from teeth standing at various angles of inclination. All high-grade plasters are much affected by low temperature and moist atmosphere, consequently they should be kept in a modertely warm, dry room and in a suitable receptacle. A tin can with a tight-fitting cover is most excellent.

When the plaster is obtained direct from the manufacturer it will require, by measure, about one and three-fourths parts of plaster to one of water to make a suitable mix; but when it has been standing some time either in the supply house or laboratory it will require two measures of plaster to one of water to produce the same results

MANIPULATION: The plaster should be saturated with water as quickly and with as little agitation as possible. The more plas-

Cut No. II

ter is stirred after setting begins, the more it expands. The plaster should be put into the water, best by sifting, as this keeps the whole surface of the water in the bowl covered with the settling plaster. Slight spatulation will hasten the saturation. A very useful implement is a kitchen flour-sieve. It consists of a cylinder of about two quarts capacity, it has a fixed handle and a small crank which revolves a horizontal wire frame within a half-globe sieve placed in one end of the cylinder. This implement is improved by having a tinner fasten a funnel, with a two and one-half or three-inch opening, under the sieve, so as to direct all of the

plaster into the water, and not a portion outside of the bowl. The bowl and spatula should be kept scrupulously clean. The salt, usually two to five grains by weight to the ounce of water, should be dissolved in the water before adding the plaster, and when the plaster is properly mixed it should be immediately placed in position in the mouth, and carefully, but firmly, supported until the proper amount of setting has taken place.

Definition of Impression: An impression is a negative likeness of a part or object, from which is produced the positive or cast.

Trays: To obtain this negative likeness, a suitable holder or tray is required The trays are made of various materials Block tin or Britannia metal is well adapted to this use, for the reason that it is sufficiently rigid, and yet pliable so that the operator may change its shape, as required, for the individual case. The ideal would be to make a tray for each individual; but this would not be practical, so the dentist keeps a few general forms in his equipment and shapes and builds them up to suit the case in hand. There are two general forms: oval floors for edentulous jaws; and flat floors to be used when some of the natural teeth are *in situ*. The trays may have the usual width flange, or an extra wide one, as in the Angle trays. The tray should be one-eighth to three-sixteenths of an inch larger in every direction than the organ to be taken; except at certain places it should have an accurate adaptation, which is procured by the addition of wax

Forming of Tray: Examine the portion of the mouth of which the impression is to be taken, making a mental note of the height of the vault, prominence of the alveolar ridge and the condition of the soft tissues. Select a tray as near the desired form and size as possible. The flanges should be adjusted either with a pair of pliers or the horn mallet. If necessary, the floor of the vault may be depressed with the mallet.

Cut No. I shows a tray prepared for and used in an extreme case of resorption.

The flanges of either the upper or lower tray should be so shaped that they will not press into the soft tissues, thereby causing the patient unnecessary pain.

Addition of Wax: In all upper cases, both full and partials, a roll of soft wax, a little thicker than the space between

the vault of the tray and the vault of the mouth, should be placed across the back-edge of the tray; and it is well in full cases to extend the wax forward upon the flange upon either side. (See cut No. II.)

Where there is a very high vault, the roll of wax should be sufficiently large to include the whole dome of the mouth. Cut No. III shows the wax prepared for the plaster, where there is

Cut No. III

a deep vault, and the molars in position. In the absence of the molars the wax should be extended around the heels of the tray, as in cut No. II.

In all lower cases the wax roll should be placed the entire length of the lingual flange.

In cut No. IV the wax is trimmed for the reception of the plaster. Note, also, the shape of the buccal flanges.

The wax should always be used in the form of a well-softened

roll, and better if the tray is warmed before placing the wax. I have known students to place a strip of hard paraffin wax perpendicular to the floor, across the upper tray from heel to heel; also our supply house expose for sale an English tray made after the same idea. The idea is simply absurd.

Inserting the Tray: The patient is comfortably seated in a low chair, slightly tilted backward. If the dentist is right-

Cut No. IV

handed he stands a little to the back and right of the patient. The index finger of the left hand is placed in the left corner of the mouth, when the right heel of the tray is inserted to nearly the cuspid angle of the tray, and the left heel is permitted to glide over the finger. The tray is properly adjusted to the alveolar ridge and firm pressure made upon the heels of the tray, until they nearly or quite touch the heels of the alveolus. The waxed tray

is then removed, in the reverse order to the way in which it was inserted, washed, and dried with a cloth. The wax is then trimmed as shown in the preceding cuts. The design is to have the wax carry and hold the plaster firmly against all inaccessible places. The excess of wax should be trimmed away so as to avoid as much as possible thin portions of plaster. The wax is securely fastened to the tray by the aid of a hot spatula. I desire to impress upon the mind of the reader, that this is not a combination wax and plaster impression; but the wax becomes a part of the maxillary surface of the tray, and is the form the tray should have if specially made.

Another use of wax is shown in cut No. V.

Where there is excessive resorption of the anterior upper process, leaving a pendulous gum, it is necessary to press the flabby portion forward, so the pressure of the plate may be upon the remains of the process. This is done by placing a roll of soft wax across the anterior floor of the tray and adjusting at the time the distal peripheral wax is formed. All the wax anterior to the middle of the alveolar ridge should be cut away; then the remaining wax will aid in forcing the excess of plaster and soft gum forward.

Taking the Impression: Having the tray prepared as described, about one ounce of water, of the temperature of the room, is placed in the plaster bowl and two to five grains of salt ($NaCl$ or K_2SO_4) dissolved in it. Two measures of French's regular dental plaster to the one of water should be sifted into it and stirred with the spatula to a smooth mix, and at once placed into the tray in such a manner as to carry the plaster to the parts desired. Care should be taken not to use an excess, or to cover a portion of tissue not necessary. This can be accomplished with experience and attention to details. The plaster-filled tray must be immediately inserted into the mouth in the manner previously described.

In taking an upper impression, as soon as the filled tray is within the oral cavity, the index finger of the left hand is carried forward, lifting and protruding the upper lip; then the heels of the tray are carried firmly into their position and so held while the anterior portion is forced to place. By this means all excess of plaster is forced over the front flange of the tray, and there will

be no confined air under the lip. Before the index finger is removed, the lip is grasped in the center, and gently drawn downward, embedding the frenum of the lip; then carried backward to the left angle of the mouth, when the junction of the lip and cheek is drawn downward, marking the left buccal frenum. The index finger of the left hand is then placed in the center of the vault portion of the tray and firm pressure applied, when the right buccal frenum is drawn into position with the index finger and thumb of the right hand. With the right hand, pressure is ap-

Cut No. V

plied to the external surface of the lip, by placing the finger near the upper edge of the flange, and with a rolling motion, force the plaster and soft tissues firmly against the maxilla. The index finger of the left hand supporting the tray is replaced with the right, when the left hand is placed upon the top of the head. By this means any sudden movement the patient may make of the head, is not imparted to the setting plaster, because of the co-relation of the movements of the hands. The handle of the tray should never be used as a support while the plaster is setting,

because the leverage is liable to enlarge the impression mold, should the patient make an unexpected movement; or, by the unsteady hand of the operator.

In getting the tray into position, a little excess plaster should be lodged upon a finger of the left hand, by which the operator can tell the condition of the setting plaster. When the plaster has set sufficiently to make a clean fracture, if necessarily broken, it should be dislodged. Grasping the handle with the right hand,

Cut No. VI

raise the lip with the left hand and make a slow upward and downward movement of handle of the tray, and repeat until the impression is dislodged, when it is taken from the mouth. Care should be taken not to leave the plaster too long in position, as the setting plaster will extract all the moisture from the mucous surface, thus causing a vacuum. There is danger of rupturing the delicate mucous membrane. The very strong adhesion of the impression does not imply a perfect one, but rather that it has been left too long in the mouth.

Cut No. VI is a full upper impression, taken according to the preceding instructions.

LOWER IMPRESSIONS: The same procedure, with the necessary modifications, apply to taking the lower impressions. Attention must always be given to removing the buccal muscles and membrane from under the tray in taking a lower impression in plaster. This is done by carrying the tray nearly into position; then, while holding the tray by the handle with the right hand, place the index finger of the left hand in the mouth, and by the aid of the thumb, grasp the back and lower part of the cheek, and draw it backward, downward and outward; then hold the tray with the left hand and remove the right cheek when the tray is placed into position. After compressing the cheeks and lip, the tray is supported by placing the thumbs upon the tray in the location of the bicuspids, and the fingers under the mandible.

PARTIAL IMPRESSIONS: Most partials can be obtained by giving close attention to the quantity of plaster used, and so placing it in the tray that little or no unnecessary portion is embedded, and removing at the earliest possible moment. Some cases may require an Angle tray, well lubricated, so the tray can first be removed and the plaster then broken from the teeth. This operation can often be facilitated by first affixing a strip of paraffin wax between the teeth upon either side of an open space. This will act as a partial separator and aid in breaking away the plaster. With judgment and ingenuity, all cases can be taken in plaster.

We close this paper by repeating: That plaster is the only material with which a perfect impression can be taken; and that just in the ratio to the difficulties of the case it is necessary to have a plaster impression.

NEW METHOD OF MAKING A HALF-COLLAR CROWN.

BY R. L. HESSER, D. D. S., LOUISIANA, MO.

Prepare the root as usual for a porcelain crown, sloping it at the labial or buccal aspect (Fig. 1).

Adopt a piece of 31-gauge platinum to root and trim so that the edges will be flush with root on both labial and lingual sides (Fig. 1 b). Make a hole for reception of post which has been previously fitted, thrust into position, remove carefully and unite

with a small piece of platinum solder (Fig. 2). Readapt to root and burnish until adjustment is perfect. Now remove and cut a piece of platinum about one-quarter of an inch wide and long

Fig. 1

enough for each end to touch floor of collar at labial slope (Fig. 3, a-a).

Solder so that the floor will be in the center of the band (Fig. 3, b, *indicated by dotted lines*) which allows one-half of the band to project beneath the gum, the other half which projects

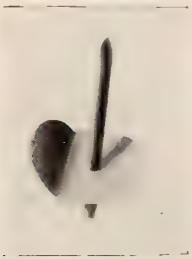


Fig. 2

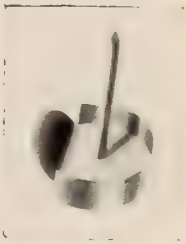


Fig. 3

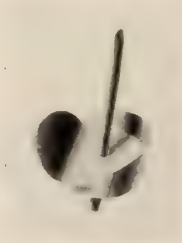


Fig. 4

above the floor will form a convenient shoulder to reinforce the porcelain body and prevent chipping, which so often occurs, as there is no union between the porcelain and platinum.

Trim ends of band on a slope with floor of collar (Fig. 4).

Contour slightly, and when finished it will fit the root perfectly and make a much neater collar than slitting ends of floor and burnishing over root. If for a Richmond crown, the solder will flow flush with the shoulder and make a much neater joint than without the shoulder. No method of constructing a crown is perfect if any of the metallic portion is visible at the labial aspect; for this reason the half-cap is far superior to the full cap.

It has other advantages, as the lingual aspect of the root does not have to be cut away so much, which is very essential to strength. The half-cap, if perfectly adjusted at the lingual surface, is just as strong as a full collar. Another advantage is that the collar does not have to be forced under the gingival margin at the labial aspect in order to conceal it from view, which often causes more or less inflammation of the peridental membrane, and last, but not least, the adjustment of the facing at the cervix is so perfect that the neck can be passed beneath the free margin of the gum, simulating the appearance of the natural teeth.

A SPLINT FOR RETAINING LOOSE TEETH.

BY W. H. TODD, D. D. S., COLUMBUS, OHIO.

To treat loose teeth successfully they should be retained so that they cannot move every time the teeth are in service. To make such an appliance and not have it unsightly is our object. The one I am about to describe will show less gold and be about as simple to make as banding Most splints are so difficult to make and consume so much time that we resort to silk ligatures, wire or gold bands. The first must be renewed very often, which destroys its usefulness, for every time it is renewed the position of the teeth is changed a little, thus causing them to lose what they have gained. Gold wire and bands are more permanent, but unsightly.

In making this splint, begin by preparing the teeth you desire to support as for banding, then make a band of 22k., 30-gauge, or finer, gold plate for each tooth, except the end teeth, which should be firm. To make these bands, take a piece of gold the proper width and of sufficient length, after passing around the

tooth, to grasp and pinch by Angle's band-forming pliers, making the crimp in the center of the labial surface of the teeth, being sure that the band is a close fit. (Fig. 1).

Make the several bands and a half band for the end teeth. In soldering the bands use 20k. solder. After the bands are soldered,

Fig. 1

Fig. 2

place them in position, take an impression with modeling compound, and see that each band and half band is in its proper place in the impression, then fill with investing material. Prepare to solder them together, being sure to get them well soldered.

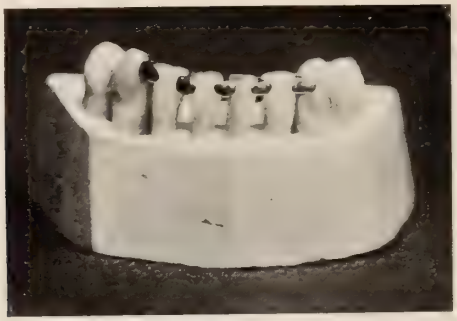


Fig. 3

Place a small piece of your banding gold across where the bands join on the labial surface to make a good finish to the button. (Fig. 2.)

After the piece is soldered, file the gingival edge of the piece straight, leaving plenty of room between it and the gum line.

Now place the piece in position on the teeth and grind the edge of the gold until it conforms to the cutting edge of the teeth. (Fig. 3.)

Take an impression of the lingual surface of the teeth, with the piece in place, with modeling compound. Take some of the modeling compound and build up the impression, using a hot spatula to join the two well together. After the impression is prepared, oil it and place the same in cold water. Now melt some Ideal fusible alloy (Samuel A. Crocker & Company, Cincinnati, Ohio) and when it is just so it will pour, lift your impression out of the water and pour in the alloy, placing it immediately back in the water to cool. This will give you the male die. To make the counter die, take an iron ring (the plunger to your shot-swager will be just the thing) and press modeling compound into the concave end, and into that force the metal die; cool and you are prepared to swage the doubler which you fit and solder to the palatal part of the splint. (Fig. 4.)

To finish, cut each side of the crimp of the bands to form the buttons, then finish so that there will be plenty of space between the gum margin and the splint. Place on the rubber dam, taking plenty of time to cement it in place. (Fig. 5.)

You will then have a splint that will retain the teeth and yet give you plenty of room to treat.

THE COMBINED RAY AND ITS APPLICATION TO DENTISTRY.

BY ARTHUR E. PECK, M. D., D. D. S., MINNEAPOLIS, MINN.

On a recent trip to the Pacific coast, and while in Seattle, my attention was called to the investigations of Dr. C. E. Rogers in the application of light as a curative agent for disease.

I was in that city some four or five days and had an opportunity of seeing a number of remarkable results under his guidance. He had been investigating and perfecting this treatment for the last four or five years and his final deductions have resulted in the adoption of a three hundred candle-power incandescent light surrounded by a peculiar reflector which condenses the rays, not to a minute point, as a parabolic shade would do, but the

condensation is of a larger range and it produces a new ray, called by him the Combined Ray. He applies this term because of using the other rays of the light spectrum in conjunction with it, believing them to be of assistance in the efficiency of this new ray. It has the property of penetrating bone with as much facility as soft tissue; as a further illustration, suppose a bullet to have lodged in one of the large bones of the body, the femur, for instance; a photograph with this light would show the bullet but not the bone, while with the X-ray, the bullet would be invisible, but the bone with the ragged entrance would be seen. It has great penetrating force and there seems to be scarcely any danger from its use, as the burn which is possible from the extreme heat is prevented by indications from the patient before it comes to that point. This is quite the opposite from the X-ray and others; therefore it can be used by the novice without danger. In its application to disease it has a large field, including many of the conditions met by the dentist, and in a large majority of these diseases the results are almost miraculous; and in all forms of inflammation and pus formation it seems to be especially applicable. My attention was attracted by this feature of the light. Therefore I had one installed in my office and the results produced by its use have given me the greatest satisfaction.

My first application was made in the case of a patient who came to me having a severe headache. In about seven minutes I was able to relieve the pain entirely, placing her in a grateful frame of mind and in a much better condition to stand the necessary pain accompanying a dental operation. I have, as yet, to find the headache which cannot be controlled by this light in from seven to ten minutes. My next application was in the case of a patient having acute neuralgia, indicating itself by the usual paroxysmal pain in the supra and infra-orbital branches of the fifth nerve. From seven to ten minutes application of the light was all that was required to entirely relieve the pain. I then had occasion to apply the light to myself, having been afflicted for years with acute attacks of neuralgia, occurring possibly three or four times a year, always occurring in the supra and infra-orbital branches. It is usually so severe that I am compelled to drop my work, sometimes in the middle of an operation; from ten to fifteen minutes application of the light relieved me entirely and I have not had a return since.

I am using it in the treatment of pyorrhea after having thoroughly cleansed the roots, and hope to see beneficial results. The time since the treatments has not been sufficient to allow me to speak definitely, but the indications are very favorable.

While the cases above mentioned should receive our attention and can be controlled with the light, the most important field lies in the almost miraculous relief given to patients suffering from a suppurating tooth. I believe that from one to three applications, of ten to twenty minutes each, will give entire relief to practically every case of this class; it destroys the pus-forming germ and the pain from pressure disappears almost immediately, allowing the operator to open and treat the tooth without further inconvenience to the patient. I have had cases come to a head in from two to three hours after the first application; when opened there would be only a drop or two of pus. It has given immediate relief in every case of suppuration on which I have used it, and, in a number of cases, I am sure it has saved the patient from twenty-four to forty-eight hours' suffering. To better illustrate the usefulness of this light, I will cite the case of a patient who was brought to my office, having ten days previous had a lower wisdom tooth removed, the dentist using a local anesthetic.

Shortly after the operation, her face began to swell and the muscles stiffen, until she was unable to take nourishment except through a straw. A consultation of the dentist and a physician resulted in a decision that the condition was caused by her having taken cold in the wound. The swelling had now involved the glands of the neck and very sensitive to palpation. It was with difficulty that I could place my mouth-mirror in a horizontal position between her teeth. Twenty minutes' application of the light removed all of the pain; it was scarcely sensitive to touch and she was able to open her mouth nearly three-quarters of an inch, and on her arrival home, she took solid food for the first time in four days. Two applications of the light cured the case.

After this, and many more marvelous results, I feel warranted in stating that this light is surely a boon to suffering humanity and I am sure that its application would be universal if the results of my experience could be realized by others. The relief of pain is a part of our work and nothing has ever come to my notice which, in the same length of time, insures such wonderful results.

REPLANTATION AS LAST RESORT FOR TREATMENT OF CERTAIN FORMS OF ALVEOLAR ABSCESS.*

BY J. R. OWENS, D. D. S., CLEVELAND, OHIO.

Replantation is the replacement of teeth in their own alveoli, which have been removed by accident or for surgical purposes. My paper will be in reference to the latter. There are at least four conditions where replantation is indicated.

First—Where there has been an abscess of long standing, and serumal calculus has been deposited upon the apical half of the root.

Second—Where the abscess of long standing has caused erosion of portion of the root, leaving rough and irritating edges.

Third—Where root is crooked or contracted so it is impossible to fill properly, thereby leaving the apical end of the root unfilled and a constant irritant to tissues leading to an incurable abscess.

Fourth—Where the walls of the root have been perforated by a drill, said perforation and unfilled end of root causing incurable abscess.

I will bring before you cases of the first three conditions, and show a tooth of the fourth condition which might have been saved had I had the chance.

The first case, Miss N., presented herself to me in June, 1899. There was a fistula at the lingual cervical margin of the left superior second bicuspid, and a profuse flow of pus. A little over two years before she came to me for the first time with an abscess caused by unskilful treatment of the first left superior bicuspid, which I treated and filled the root with oxychloride of zinc to the best of my ability. So when she came at this time, I immediately concluded that that same first bicuspid was the cause of the trouble since the second bicuspid was perfectly sound as far as I could observe. I knew I had filled the root of the first bicuspid to the best of my ability, so did not deem it wise to try it again, but concluded there must be some abnormal condition at the root. I decided to extract, remove the cause of the trouble and replant. Administering nitrous oxide gas, the tooth was removed. There

*Read before the Cleveland City Dental Society. Skiagraphs by Dr. W. A. Price.

was found on one side of the root quite a deposit of serumal calculus. This I removed with a scaler, replanted the tooth, and bound it solidly in place with a splint. There was an improvement in regard to the mount of pus discharged, but I could not stop it entirely. The superior left lateral had been crowned by her former dentist, and I noticed a cicatrix above the tooth, indicating there had been a fistula. Upon inquiry I learned the tooth had given her considerable trouble in times past. I removed the crown and discovered that the last third of the root had not been filled. I treated and filled the root and placed a crown upon it. There was a marked improvement, and I thought at last I should be able to dismiss my patient. I did so, but in a few weeks she returned and I saw the discharge was considerable. I decided to have a skiagraph.

Fig. 1

a.—First bicuspid extracted and replanted July 10. *b.*—Left lateral incisor root treated and recrowned Sept. 6. *c.*—Surgical opening to abscess between central and lateral incisors Nov. 9. *d.*—Lateral incisor extracted, root amputuated, and replanted.

No. 1, made November 5, 1899. I was amazed to see the extent of the abscess, extending from the left central incisor to the left first molar. Locally anesthetizing the gum, I perforated the alveolar wall to the most dependent point of the abscess, between the central and lateral incisors. This enabled me to cleanse the cavity more thoroughly with antiseptic washes, which greatly benefited the case, but I could not stop the flow of pus entirely. I thought I noticed on the root of the crowned lateral some erosion and concluded to extract the root. I was confirmed in my surmise, and ground off with corundum wheel all roughness and scaled off a slight calcic deposit, replaced the crowned root, and held it firmly with a splint; this was done December 23,

1899. Immediately there was improvement and without further treatment pus stopped flowing and the fistula healed.

Fig. 2

Diagram No. 2 skiagraph was taken February 20, 1900, showing a great change in three months and a half.

Fig. 3
a.—Resorption. *b.*—Not normal density.

Diagram No. 3 shows skiagraph taken four years later, namely, February, 1904.

You will observe the abscess has disappeared, but there is a lack of density of the bony structure immediately above the apex of the crowned lateral incisor and alas! a showing of resorption occurring in either root. The patient's gums above these teeth are perfectly healthy and no indication that any abnormal condition exists. Whether the attack of osteoclasts on the root will continue until the tooth becomes loose and finally lost, I cannot say. To-day the replanted teeth are as firm as any teeth in the patient's mouth, and I am sure no one would suspect that the teeth had ever been out of the mouth or that anything was wrong with them now.

The second case, Miss F., appeared for treatment of fistula over the superior right lateral incisor. It was angry and great absorption of the tissue had taken place. The tooth was to all appearances sound, but upon testing, it indicated a dead pulp, which was removed, tooth treated and filled April 16, 1902, and patient dismissed. She appeared about six months after, and the fistula still present. November 19, I had a skiagraph taken which is shown in diagram No. 4.

In diagram No. 4 you will observe a large abscess, also a crooked root, and that my oxychloride of zinc filling stops at the bend of the root. I administered nitrous oxide gas and extracted the tooth, December 11th While out I made an outline drawing of which Fig. No. 5 is a fair copy, showing at the end of the root

Fig. 4
a.—End of root filling. *b.*—Abscess.

a nodule on lingual and a crook on the labial side. These were removed and the apex filled, all serumal calculus removed, of which there was a little; the tooth was replaced and held firmly with a splint for a week or ten days. The discharge of pus ceased, the angry appearance of the fistula disappeared, but owing to the fact that the gum on the labial surface over the tooth had almost entirely sloughed away before the operation was performed, there was not enough tissue left to cover the opening, so it is there to-day, but the tooth is firm and healthy, no pus whatever exuding. Diagram No. 6 is a skiagraph taken January 21, 1904, over two years after, and shows the condition of the tooth to-day. There is no erosion indicated and the bony tissue about the root is normal.

Case number three, Mrs. B., came to me in October of 1899, with fistula and a discharge of pus from the superior right lateral incisor. October 23rd, I treated and refilled the root of the tooth and dismissed the patient with the assurance that the fistula would disappear. About a year later she called and I was surprised to see the fistula there, but very much contracted and a slight flow of pus. October 19, 1900, a skiagraph was made which appears in diagram No. 7.

You will observe the destruction wrought by the abscess between the cuspid and lateral The practiced eye will detect a curve in the root of the lateral incisor. Administering gas, I extracted the tooth October 31st, and while out, made an outline

Fig. 5

Fig. 6

drawing of which No. 8 is a fair copy. You will observe the curved root and the filling stopped at the bend of the root. I cut off the crook of the root, filled the apex, replanted and made the tooth fast in place with a splint. This was removed in about ten days. The pus did not stop flowing so promptly as in the other cases, but in six months it had done so and to-day the gum is hard and firm about the neck of the tooth; the tooth is as firm as any in the mouth. The patient is an invalid and owing to the bad weather and the necessity for her leaving the city for a warmer climate, I was unable to get a skiagraph showing the present internal condition of this case, but at a future time I may be able to do so. One thing is certain, the patient is greatly pleased over the result.

The fourth case, a "might have been," is an extracted tooth,

brought to me by a patient who lives in a village not far from Cleveland. Handing the tooth to me, he said: "It got to aching so I could not stand it and I went to the village dentist and had it out." You will observe a drill had been used in the canal and the evil it brought. Had I extracted that tooth I verily believe the patient would have been having the use of it to-day. I should have ground off the apex of the root and filled the canal up to the part now filled, replaced the tooth and treated in the same way as the preceding cases.

While I am gratified with the success of these efforts of replanting teeth, I realize the results might be better. I wish there was no resorption present in Miss N.'s case. I cannot say how long she will retain the teeth. This I know, she has had them

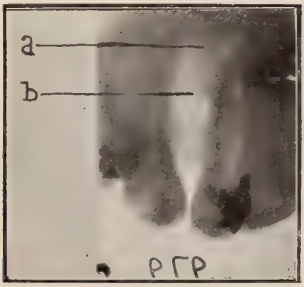


Fig. 7
a.—End of root. *b.*—Abscess.

four years longer than she probably would have had them if the replantation had not been done and I should judge they were good for as much more time at least.

In Miss F's case, she is having perfect comfort, where before there had been constant annoyance, with the prospect of ten years service. The same remarks apply equally well to Mrs. B.

Perhaps I should tell my method of treating teeth in replantation. Before extracting, I cut the gum free from the tooth up to the alveolus. If the patient does not wish to feel the pain of extraction, I administer nitrous oxide gas. I do this in preference to cocaine injection, because of my desire to have the tissue in normal condition with the least danger of sloughing. I keep the tooth in a moist sterilized napkin, and do not handle the root with

my fingers. In cleaning off the root, am careful not to remove the connective tissue, but remove carefully all foreign deposits and grinding off any sharp or rough edges when erosion has occurred. I do not polish this, but am satisfied with the surface the fine corundum wheel gives it. I enlarge the apical foramen and fill the end of the root with Hill's stopping. When ready to replace the tooth, I wash out the alveolus with sterilized water to which a small quantity of phenol sodique has been added. I am not particular to remove the clot of blood from the socket. The tooth is generally easily replaced, and with little pain to the patient.

I make the splint from Perfection base plate, which is made of shellac, which answers every purpose and can be adapted in ten minutes. Having a bowl of hot water, I dip the base-plate mater-

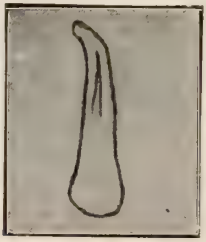


Fig. 8

ial in, and it soon becomes soft enough to cut off what I want with scissors. Softening this piece again, I quickly put it around the teeth to be enclosed and with the aid of a burnisher, fit it nicely about the necks of the teeth. Then remove and trim the surplus away with scissors and soften and quickly return to place, and with burnisher fit carefully again. Let it remain about the teeth until entirely cool. Carefully remove and drill holes in the interdental spaces so the splint may be ligated firmly to the teeth adjoining the one replanted. I will pass around a model showing how the teeth appear with splints in place.

Instruct the patient to rinse the mouth daily with three per cent. pyrozone. You should see the patient the day following the operation to observe that all is well. Then several days may elapse. By ten days I should expect the union between tooth and alveolus sufficient to remove splint.

AN ORIGINAL TOOTH EXTRACTOR.

BY R. D. CHURCH, D. D. S., RUTLAND, OHIO.

It is said that "necessity is the mother of invention," but it does not necessarily follow that all inventions become necessities. The writer has in his possession a novel pair of forceps; the original and only pair of the kind in existence. It was in the year 1855 that Horace Holt, Rutland, Ohio, conceived the idea of fashioning a pair of universal forceps that would supplant the much-used and often "too-effective" turn-key for extraction of teeth, and the result of his inventive genius was the instrument here illustrated.

Fig. 1

It was never patented, not because the inventor had more scruples about patented dental appliances than many in the profession to-day, but because at the patent office the officials did not see fit to grant one When Mr. Holt applied for a patent on his invention his only response was a letter of inquiry asking, "whether he had ever *pulled* any teeth with it; and if so, did his victims survive the shock."

As will be seen by the illustration, the forcep is swiveled to an iron standard. In using the instrument, it was held in the left hand, the forcep beaks (a) placed over the tooth to be removed

and tightened on it by the screw (c). The whole was held with a firm grasp in the left hand and a sharp blow from a hammer in the right hand, brought on the end of the instrument (b) forcing the beaks upward as in Fig. 2.

The forcep beaks being screwed tightly on the tooth, something had to give way when the blow was struck.

There are still living two pioneers who had teeth extracted by this instrument, and they declare that it was successful and that the shock was soon over.

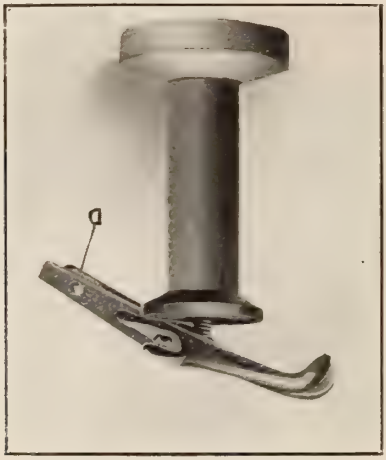


Fig. 2

In extraction of the upper teeth the instrument was inverted and the blow struck on the shaft at (d).

In one instance, it is related, a neighbor physician borrowed the instrument to extract a refractory upper molar for one of his patients, and not giving the workings of the instrument due study, struck the blow on the wrong side of the bar and drove the tooth into the antrum.

For all it was the only one of its kind, this instrument served a useful purpose, as barbarous as it may seem to the modern dentist.

A NEW METHOD OF STARTING GOLD FILLINGS.

BY DR. W. L. SCHREIBER, PHILADELPHIA, PA.

The latest method which I have been using in the preparation of cavities to be filled with gold, suggested itself to me through the use of the Jenkins' inlay system.

It consists in making the cavity retentive, but without the deep grooving or retaining-pit, making just enough undercut to retain the finished filling. I then take a piece of No. 30 gold-foil, which is used in the Jenkins' system, large enough to suit the case. Then proceed the same as in making the matrix for a porcelain inlay, pressing the foil in absolute contact with the cavity walls and margins, the latter being beveled as is usually done for a gold filling, the excess being pressed out over the exposed surfaces of the tooth, *i. e.*, the enamel. It may sometimes be necessary to ligate the matrix in until you have partially filled the cavity, but I have never found this necessary, because of the close adaptation of the foil to all surfaces. Those of you who have experienced the difficulty which attends the removal of a properly-prepared matrix, even where no undercuts exist, will readily see how this matrix will keep its place throughout the operation. I then pack soft gold into the slight undercuts and upon the floor and walls of the cavity, finishing with cohesive.

This method does away with the use of retaining pits and the use of varnishes to start the filling, as advocated by many practitioners and sold by dental supply houses, although I have never found the necessity to use them. Only the smallest amount of undercutting is necessary if made in the right place, thereby reducing the encroachment upon the pulp to a minimum, which must be acknowledged to be a great consideration, especially in deep-seated cavities.

The exposed surface of the matrix should be wiped off with alcohol or chloroform and dried with hot air before commencing the packing of the gold.

A FEW CARDINAL POINTS IN ORTHODONTIA.*

BY F. M. CASTO, PH. G., M. D., D. D. S., COLUMBUS, OHIO.

I have selected a few cardinal points in orthodontia which I hope will be both interesting and instructive to you, and I will also present some corrected cases of malocclusion. The first and most important lesson taught in this specialty (I say specialty, because the field in orthodontia is sufficiently large and the best results are obtained by practicing it as such) is occlusion, plain, old, every-day occlusion, which should be the first thing

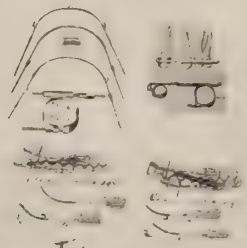


Fig I

drilled into the minds of all dental students, but unfortunately it is not, excepting, perhaps in a few dental colleges which have awakened within the last two or three years to the sad realization of their past mistakes, and have inaugurated the proper methods.

It has been said and truthfully, too, that "occluson is not only the basis of orthodontia, but of all dentistry;" the man, in my mind, who attempts the practice of dentistry or orthodontia, looking, as it were, to the "ideal," is just as helpless and powerless to obtain such results without a thorough knowledge of occlusion as the man who attempts to master surgery without a complete and thorough knowledge of anatomy, or the person who would

*Presented at the Ohio State Dental Society, December, 1903.

become a distinguished musician without first learning the fundamental principles of music. Yet, gentlemen, how many dentists observe in their daily practice whether the teeth of their patients are in normal occlusion, and how many really know whether the

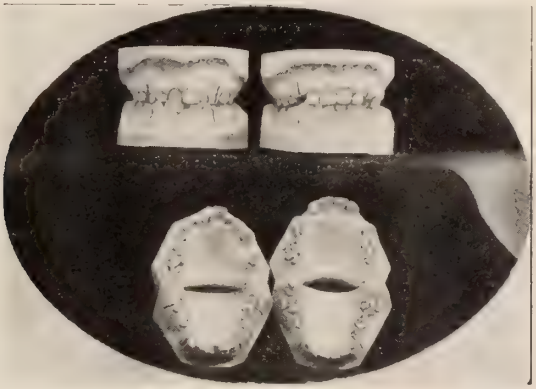


Fig. 2

mesio-buccal cusps of the upper first molar should occlude in the buccal groove of the lower first molar, or that the buccal cusp of the upper first bicuspid occludes with the distal incline of the

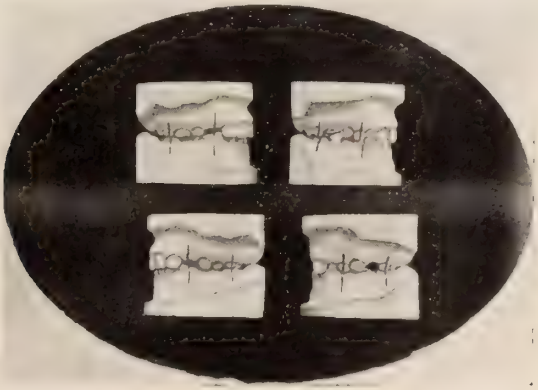


Fig. 3

buccal cusp of the lower first bicuspid and mesial incline of the buccal cusp of the lower second bicuspid?

The picture before you, gentlemen, illustrates normal occlusion. By this I mean that every tooth in both arches conforms

to "an imaginary line passing over the buccal cusps of the lower molars and bicuspids, points of the cuspids and cutting edge of the incisors. In the sulci between the buccal and lingual cusps of the upper molars and bicuspids, over the lingual ridge of the cuspids, and marginal ridge of the incisors about one-third the distance between the cutting edge and cervical margin." This is called the "line of occlusion," and any deviation thereof would be malocclusion.

Fig. 4

Fig. 5

There are seven positions of malocclusion and their various combinations teeth may occupy, viz.—"1, mesial; 2, distal; 3, buccal; 4, lingual; 5, infra; 6, supra; 7, torso.

The upper arch is slightly larger and overhangs the lower labially and buccally, the lingual cusps of the upper teeth being received between the buccal and lingual cusps of the lower teeth and the buccal cusps of the lower teeth being received between the buccal and lingual cusps of the upper teeth; this arrangement, together with the interdigitation of cusps, greatly increases the grinding surfaces of the teeth in masticaton.

Notice, if you please, that each tooth, excepting the lower central incisor and upper third molar, each of which occlude with

but one tooth, is not only dependent for support upon its neighbors in the same arch, but upon two teeth in the antagonistic arch. This arrangement demonstrates most decidedly the fallacy of extracting teeth, especially for the purpose of correcting malposed

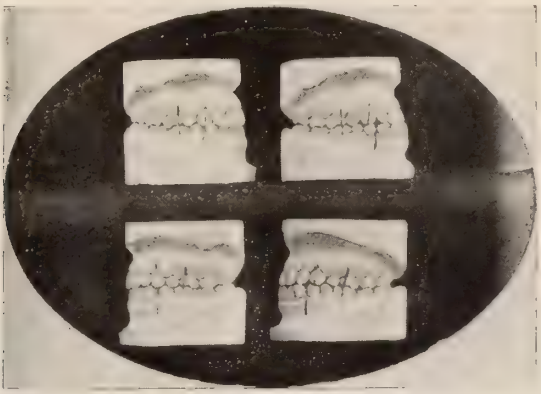


Fig. 6

teeth, for if but a single tooth be sacrificed in either arch the harmony of occlusion would be entirely disarranged in both and ideal results could never be obtained.

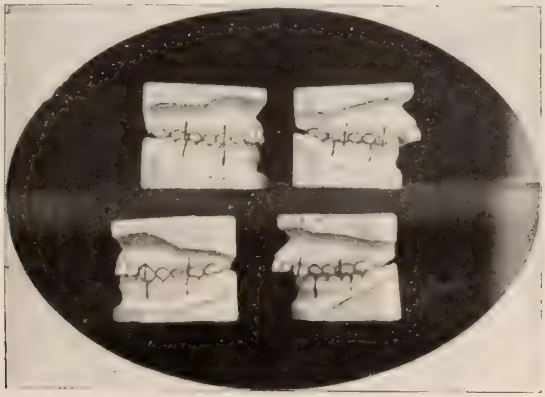


Fig. 7

Occlusion has suffered more harm from the extraction of permanent teeth than any other cause, and it is an acknowledged fact by orthodontists that mutilated cases of malocclusion are *by far* the most difficult ones to treat. "The interdigitating of

the cusps or influence of the incline planes, the dependence of one arch upon the other and the influence of the muscles, lingually, labially and buccally, are the most important factors which govern normal occlusion. These same factors act likewise in governing malocclusion." Therefore, if a tooth during its eruption is guided into an abnormal instead of a normal position by the influence of incline planes; or if one arch fails to properly develop while the other develops normally and causes malocclusion. Nature alone is absolutely powerless to correct the irregularity, yet how often do we hear of that ill and oft-repeated advice:

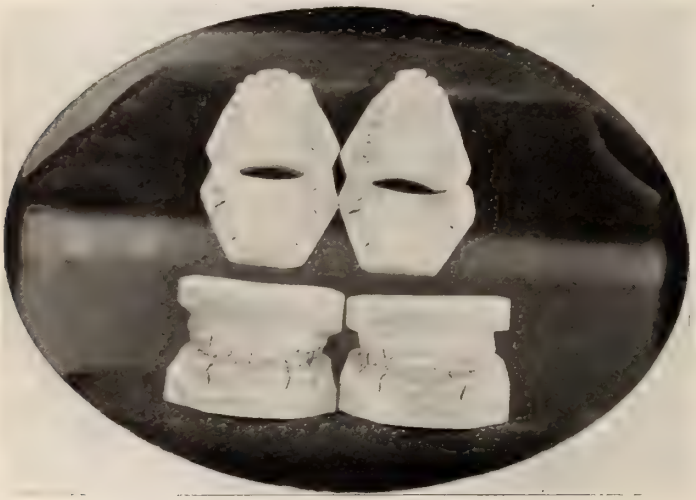


Fig. 8

"Let the teeth alone and nature will correct the deformity." We might just as well expect nature to transform the sex after birth.

Observe the position of the teeth mesio-distally in normal occlusion.

The posterior lower teeth are removed mésially the width of one cusp to the corresponding upper teeth, the upper first bicuspid occluding between the lower first and second bicuspid and the lower second bicuspid occluding between the upper first and second bicuspids; this mesio-distal relation of the arches forms the basis of the Angle classification, which I shall briefly explain. In this classification the lower arch is considered in its relation to the upper. The upper cuspids and mesio-buccal

cusp of the upper first molars have been selected as points from which to note the normal or abnormal mesio-distal relation of the arches. They were chosen because of their being more often found in relative normal mesio-distal positions than any other teeth, the first molars usually taking their place in the arch uninterrupted, with nothing especially to interfere, and the cuspids being strong and powerful, force themselves into their proper positions; however, these points do not absolutely determine the class as the occlusion of the greater number of cusps is always to be considered.

Fig. 9

Fig. 10

Lines drawn through the center of the above-named points would fall between the lower cuspid and first bicuspid and the buccal groove of the lower first molar respectively, when the arches are in normal mesio-distal relation.

Class 1 The mesio-distal relation of the arches is normal. It matters not what positions of malocclusion the teeth may occupy, whether in buccal, lingual, torso, infra or supra occlusion, or any of the various combinations thereof, so long as the mesio-distal relation of the arches is normal the case will fall in Class 1.

Class 2. The lower arch is distal to normal in its relation

to the upper arch; this class consists of two divisions and two subdivisions.

Class 3. The lower arch is mesial to normal in its relations to the upper arch. This class consists of a division and a subdivision.

The establishment of this classification by Dr. E. H. Angle marks a very important step forward in orthodontia. It practically brought law and order out of chaos.

Before its acquisition, there was no system of diagnosis, and we were about as well prepared to manage cases of malocclusion

Fig. 11

Fig. 12

as the physicians were to treat typhoid fever, pneumonia, cerebro spinal meningitis, etc., before the discovery of certain characteristic symptoms which enabled them to diagnose such cases.

When we become thoroughly acquainted with the normal and can distinguish how much the abnormal deviates from it, then we are arriving at a basis upon which treatment will be governed; but so long as we are treating symptoms, and those more especially for appearance's sake, without respect to the establishment of normal occlusion, just in that much will our efforts be unsuccessful.

Before entering upon the treatment of a case of malocclusion, accurate models should be obtained. This is best accomplished by taking plaster of Paris impressions. The models should not only show the crowns of the teeth, but as much of the process

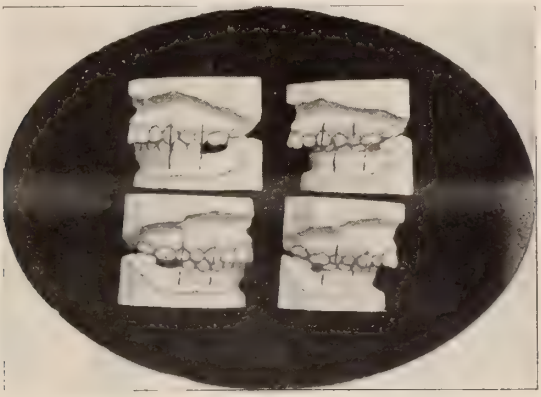


Fig. 13

as possible; also a distinct outline of the vault of the arch; in fact, everything in the mouth as far up as the attachment of the muscles. The selection of the appliances is indeed im-

Fig. 14

portant, for without efficient ones our efforts would certainly prove unsuccessful; there are, I believe, descriptions of somewhere between five and seven thousand different kinds of regulating appliances published; so far in my practice I have found

use for only two and their accessories, viz.: The expansion arch and traction-screw. Fig. 1 shows Angles' improved expansion arch and traction-screw, also the Baker anchorage used in connection, for the purpose of "shifting the occlusion" or "jumping the bite" and various other movements. The advent of this anchorage into orthodontia and its subsequent developments has all but revolutionized the practice. By its use the head gear, or occipital anchorage, has almost been eliminated and operations have been made possible within a few weeks that previously required months and often years.

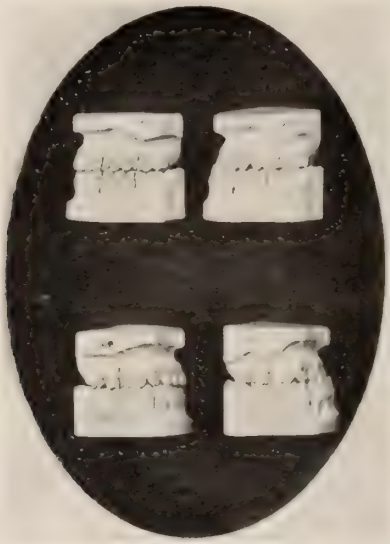


Fig. 15

Figs 2, 3, 4 and 5 show a case of Class 1. The mesio-distal relation of the arches is normal. The upper right central and lateral and the upper left lateral were in torso-lingual occlusion. The lower left central was in lingual and the lower right central in torso occlusion; both arches were short mesio-distally. Patient, twelve years old.

Fig. 6 illustrates a mutilated case of Case 1. The upper arch shortened by extraction of first bicuspids at age of fifteen. The lower arch was crowded in anterior region, the incisors and cuspids being in labial occlusion. In this case the lower bicuspids were extracted and the lower arch reduced to harmonize in size with the upper. Patient, thirty years old.

Figs. 7, 8, 9, 10, 11 and 12, illustrates a case of Class 2, Division 1, and is characterized by distal occlusion of the lower arch, lack of development of the mandible, contracted upper arch and protrusion of the upper incisors.

The patient, who was fourteen years of age, gives history of mouth-breathing dating from about the age of four years and continuing until the age of twelve years, when an operation was performed for the removal of adenoid vegetations, after which

Fig. 16

Fig. 17

normal breathing was established, being interfered with, however, by the condition of the mouth, the upper teeth protruding so much, and the upper lip being so short and thin, that it was with considerable difficulty the lips were closed tight enough to prevent more or less mouth-breathing. The lack of development of the upper lip, due principally to its being put out of function by mouth-breathing, rendered it almost useless in preventing the labial movement of the upper incisors; this movemnet was also facilitated by the pressure of the lower lip against the lingual surfaces of the upper teeth, as the patient would continually bite it, the habit causing an abnormal development of the lower lip.

Figs. 13 and 14 illustrate another case of Class 2, Division 1. Unlike the previous one, however, in that it has been mutilated by the extraction of the two lower six-year molars. It is characterized by distal-occlusion of the lower arch, undeveloped mandible, contracted upper arch, protruding upper incisor.

Patient, boy sixteen years of age. History of mouth-breathing and operation for nasal obstruction.

SYNOPSIS OF TREATMENT.

First, that the occlusion anterior to, and including, the lower second bicuspids be "shifted" forward and the lower second molar moved distally, they having moved mesially, partially filling the space caused by the extraction of the first molars.

Second, that the lower arch be expanded in region of cuspids and the incisors moved labially into alignment. The four lower bicuspids and right cuspid to be rotated.

Third, the upper arch to be expanded and anterior teeth aligned; the right lateral and left central to be rotated.

Figs. 15, 16 and 17 illustrates a case of Class 3, Full Division. The mesio-distal relation of the arches is abnormal. The lower arch is mesial to normal in its relation to the upper. Patient, young man twenty-two years of age.

These cases grow progressively worse and many times result in unsightly deformities. There is an over-development of the mandible and very great movement in the articulation.

You will observe in this case that both arches are exceptionally large and well developed; the upper being slightly flattened in region of incisors.

The treatment in this case consisted first, in "shifting" the occlusion; second moving labially the upper incisors to put them in better alignment; third, expansion of the lower arch to harmonize in size with the upper, as it would meet with a large circle in the upper when moved distally.

THE PREPARATION OF ENAMEL WALLS AND MARGINS FOR FILLINGS.

BY L. P. BETHEL, M. D., D. D S., COLUMBUS, OHIO.

I have been asked to talk to you to-night on the preparation of enamel walls and margins for fillings. For fillings other than inlays. Many of you are undoubtedly familiar with this subject, and of those I ask indulgence. Some, perhaps, have not given it the study requisite for an understanding of its great importance and if I can throw any light upon this important procedure I shall feel that I have not talked in vain.

Dr. G. V. Black first called attention to the cleavage of enamel in 1891, but comparatively few followed his teachings, and not

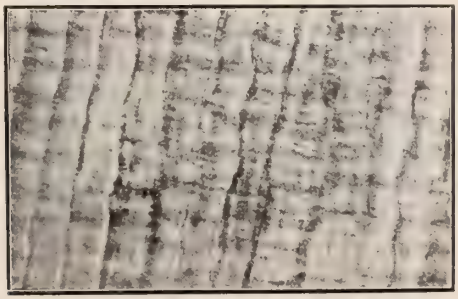


Fig. 1

until within the past few years has the subject received the recognition it deserves. Dr. F. B. Noyes, supplementing the work of Doctor Black, has presented the various phases of enamel cleavage in several society meetings, but I believe the subject has never been presented before this body.

To make a filling as nearly perfect as possible, the cavity walls should be as strong as can be obtained, and to obtain the strongest walls one should at least have a knowledge of the general direction of the enamel rods in the various portions of the teeth, an understanding of carious action, and possess good judgment as to how much tooth substance should be removed.

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*A talk given before the Ohio State Dental Society, December, 1903.

In order to present the subject in a systematic and progressive manner, I will divide it into subtopics as follows:

First: Structure of enamel.

Second: Carious action on enamel substance.

Third: Cleavage of enamel.

Fourth: Obtaining of greatest strength in enamel walls and margins.

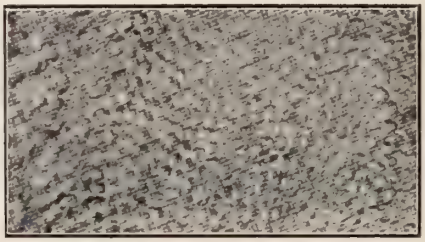

Fig. 2

STRUCTURE OF ENAMEL.

Enamel, as you know, is made up of two calcified structural elements, the enamel rods or prisms, and the interprismatic or cementing substance.

The prisms are long, slender, five or six-sided prismatic

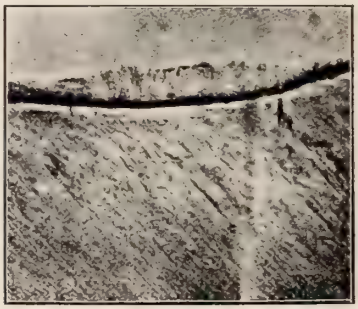

Fig. 3

rods, built up in layers, alternately constricted and expanded as will be seen in Fig. 1.

For all the constrictions and expansions of the enamel seem to more often come opposite each other than to interlock, the spaces are filled with the interprismatic cementing substance and

the whole held in close union. The cementing substance, however, is not as strong as the enamel rods themselves, and is more readily acted upon by acids than the prisms, as will be shown later.

A cross-section of enamel, as seen in Fig. 2, has somewhat the appearance of a mosaic floor.

For our purpose it is not necessary to go into the histological structure of enamel in detail, so with this superficial view of it we will pass to the next division of the subject, leaving the structural arrangement of the rods, etc., to be considered later.

CARIOUS ACTION ON ENAMEL SUBSTANCE.

Caries attacks the surface of enamel and is looked upon by

Fig. 4

Miller and others as a chemico-parasitic process. Williams has found bacterial masses closely adherent to the enamel surface of the tooth and demonstrated that caries occurs directly beneath these gelatinous placques. Fig. 3 is a reproduction of a photomicrograph showing a mass of bacteria attached to Nasmyth's membrane on the proximal side of a bicuspid tooth.

Bacteria may, or may not, cause caries. This depends upon conditions of nutrient media in the mouth. In the presence of proteids and absence of carbohydrates, the resulting putrefactive process would bring about an alkaline reaction which would not affect the enamel; but in the presence of carbohydrates (sugars,

starches, etc.), fermentation takes place resulting in the formation of an acid by the bacteria, supposed to be lactic acid, that does act on the tooth enamel, preparing the way for caries.

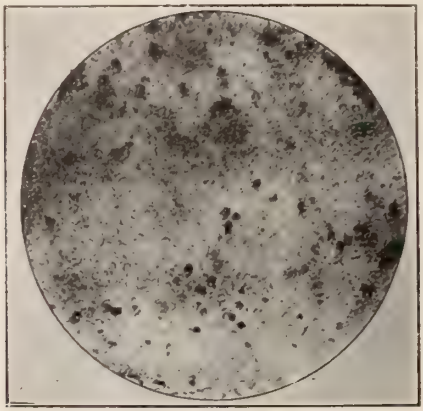

Fig. 5

Carbohydrates being constantly present—the mouth, and carbohydrate fermentation taking precedence over proteid and other

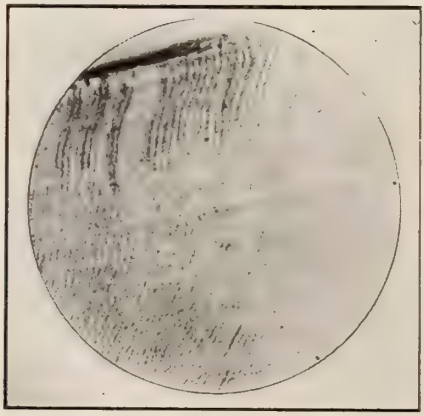

Fig. 6

kinds of fermentation—you will readily see the great liability of the teeth to carious action.

As stated, the interprismatic cementing substance is weaker than the enamel rods themselves and is more readily acted upon

by the acid excreted by the bacteria adherent to the enamel surface. Fig. 4 shows a highly magnified mass of bacteria attached to the surface of a tooth and the action of acid in dissolving the cement substance and forming V-shaped spaces between the

Fig. 7

enamel rods. Fig. 5 shows the appearance of the surface of enamel under one of these bacterial placques. The acid has attacked the interprismatic substance and in some places the ends of the rods have broken away. Fig 6, a section of enamel showing deeper penetration of the excreted acid between the enamel rods. Fig. 7 shows further progress of caries and deeper penetration into the enamel substance. Fig. 8 is a section, where the bacterial

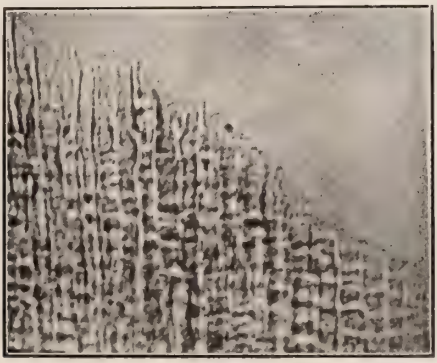

Fig. 8

mass has been carefully removed, showing the action of the acid in general on the enamel. Williams says: "As the acid produced by the micro-organisms dissolves out the cement substance between the rods, the bacteria insinuate themselves deeper and

deeper in the depressions thus formed. The acid is continually being formed and its full dissolving power continuously acting on the tissue. With the removal of the cement substance the loosened rods and sections fall apart, and the work of destruction is finished." Fig. 9 shows the final disruption and destruction of enamel rods, the result of the dissolution of the cementing substance by the acid.

It would take too much of your time to go extensively into the subject of dental caries, and as it is only necessary, so far as enamel cleavage is concerned, to show you how, in general, the enamel is disintegrated through carious action, I will pass on to the next division, that of

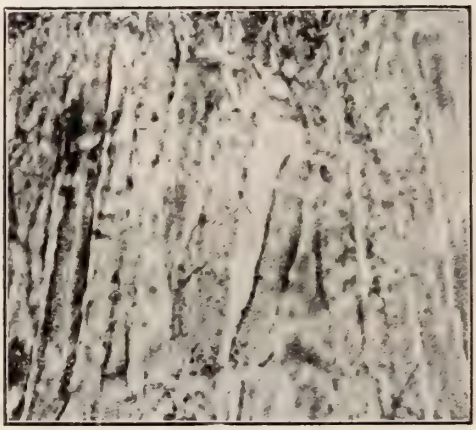

Fig. 9

CLEAVAGE OF ENAMEL.

If you have not already noticed you will see upon close observation that enamel usually checks or cracks in definite directions. The ground specimen, Fig. 10, shows a number of checks. You will observe that these cracks are all in the same direction and in the direction of the enamel rods in general.

The interprismatic cementing substance is weaker than the enamel rods and enamel will usually break at the cementing substance before it will break in the rods themselves.

For instance, where there is an opening in the enamel substance, made by caries or otherwise, the enamel along the sides of this cavity is readily broken down by a blow or pressure

from a sharp chisel held at an acute angle to the surface of enamel, on account of the cementing substance giving way under the wedging force of the chisel. In this way it is easy to break down any extent of enamel, while if one attempts to cut across the rods he finds it a difficult task, owing to the enamel composing the rods being so dense and hard. At times, however, the enamel is not so readily forced apart, and in fact it seems almost impossible to break or cut it away in any manner, and when it does break it is irregularly and not in definite directions as shown in Fig. 10.

Searching for a cause of this, we find that the structural arrangement of enamel is not all the same. In some sections the rods run straight from the surface of the enamel to the surface

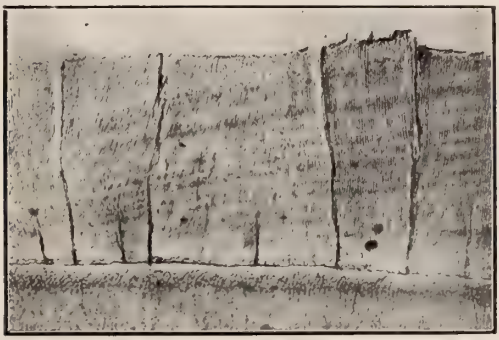

Fig. 10

of the dentine. In other sections we find the rods straight a part of this distance and then they take a twisted or wavy course. In other sections we find throughout the whole extent that the enamel rods run irregularly and have this wavy and gnarled appearance. In cleaving enamel, then, we may find enamel with straight rods, enamel with straight and gnarled rods, or enamel gnarled throughout its whole extent. Fig. 11 is a section of straight enamel easy to cleave in definite directions along the line of the enamel rods. Fig. 12 is a section of gnarled enamel impossible to cleave along the line of the rods, and difficult to cleave in definite directions. It is like splitting a pine knot, and many of the enamel rods are broken across. In fact, at times this gnarled enamel seems to defy the best tempered chisel or bur.

The location of gnarled enamel is usually on the occlusal surfaces of bicuspids and molars, and over the cusps of the teeth. The straight enamel is found on the labial, buccal, lingual and in fact all axial surfaces. At times, we find the outer portion of enamel on the occlusal surface made up of straight rods, while the

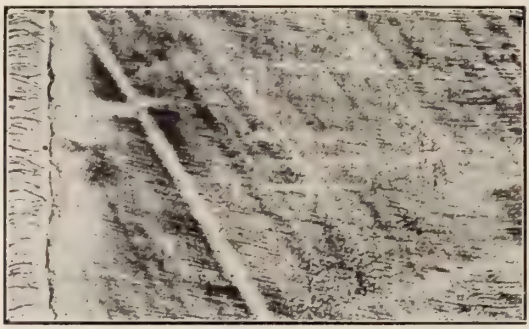

Fig. 11

inner ends of the rods are gnarled. In attempting to cleave this sort of enamel, one usually finds that the enamel cleaves away as far as the straight rods extend, then breaks away, leaving the gnarled portion adhering to the dentine.

In attempting to cleave gnarled enamel, one will find that it does not break in definite directions, but irregularly across the

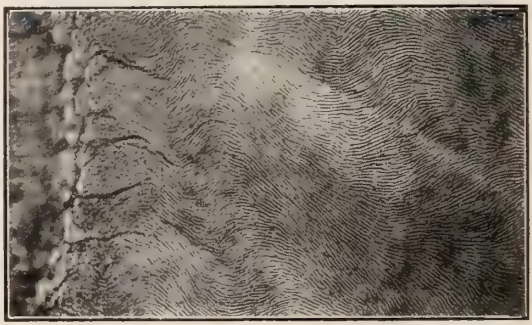

Fig. 12

rods as well as between them, and has to be planed down to a smooth edge with a chisel to make a good margin.

The straight enamel cleaves in the direction of the rods and requires but little planing to obtain a smooth margin. It is probably impossible to cleave a portion of enamel without breaking

across some of the rods, but cleaving from the surface with chisel at an acute angle, leaves the portions of rods near the inner ends supported by dentine and enamel and protected by the subsequent filling.

The object of cleavage of enamel is to ascertain the direction of the rods in the location of cavity margins, that these margins may be supported by full length or well-supported enamel rods, so far as possible.

Doctor Black has given the following requirements for greatest strength in cavity walls:

1.—Enamel should be supported on sound dentine.

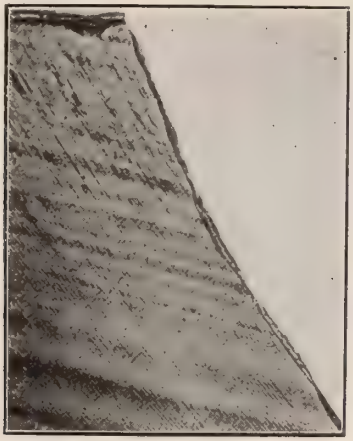

Fig. 13

2.—Rods which form the cavo-surface angle should run uninterrupted to the dentine and be supported by short rods with their inner ends resting on the dentine and their outer ends abutting the cavity wall where they will be covered by the filling.

3.—The cavo-surface angle should be cut in such a way as not to expose the ends of the rods to fracture in condensing the filling against them.

To cleave enamel successfully, the chisel should be sharp and the enamel broken down little by little. If the chisel has not a "biting" edge, but is dull, many rods are broken across and the resulting break does not follow so nearly the direction of the enamel rods.

Fig. 13 shows a section of straight enamel as cleaved by a sharp chisel. It will be seen that the enamel has separated in the general direction of the enamel rods and requires but little planing with a chisel to make a good margin.

Fig. 14 represents the margin, as planed with a chisel, following the direction of the enamel rods, and beveled at the cavo-surface angle to protect the ends of the rods from fracture when filling.

Fig. 15 is a drawing representing a bucco-lingual section of an upper bicuspid and shows the general direction of the enamel rods in this particular location. It will be noticed that the enamel

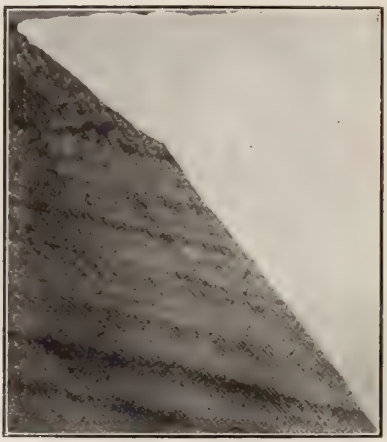

Fig. 14

rods in the gingival portion do not run horizontally from dentine to surface of enamel, as many suppose, but that they incline somewhat gingivally. As we pass from the gingival toward the occlusal we see that the rods become horizontal to the surface of the tooth, then gradually incline more and more toward the cusps until at some point on the cusps the rods stand vertically. Passing over the cusps the rods may be seen inclining in the opposite direction toward the dentine, following the curved surface of the cusps, but varying according to the height of the cusps; the higher the cusp, the greater the inclination.

In the cleavage of enamel for strength in cavity walls, one should acquire a knowledge of the general direction of these rods

in every location on the tooth, and prove the direction by cleaving with the chisel.

Fig. 16 shows some diagramatic sections of a bicuspid and a central incisor. Fig. 16, A, represents a cross-section of a bicuspid. In the formation of an approximal cavity in such a tooth, you will notice the difference in the angle of cleavage, according to location and extent of the cavity, that should be followed in order to obtain the strongest walls. Fig 16, B, C, D, E, show the general arrangement of the enamel rods in various locations on an incisor, and the angle of cleavage in the variously located cavities. (This slide has been made from one of Dr. G. V. Black's diagrams.)

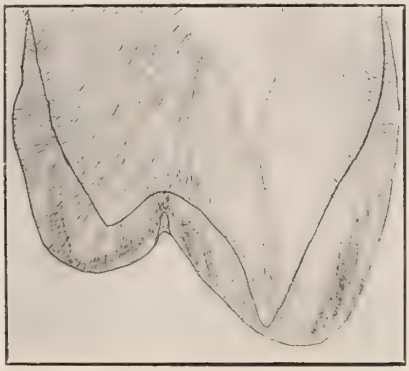

Fig. 15

Now let us look at the application of this cleavage in preparing a few cavities and see if its observance is advantageous

Fig. 17 shows a cavity prepared by the use of burs as many dentists would shape a cavity of this sort if they were paying no attention to the direction of the enamel rods. After that cavity was prepared, a sharp chisel was applied to the tooth and the enamel cleaved away in the direction shown in Fig. 18. When burs are used for the shaping of cavities, the operator cannot tell anything about the direction of the enamel rods.

Now some will ask, why a cavity prepared like Fig. 17 is not just as strong as one cut away toward the incisal edge as shown in Fig. 18? It is because the enamel rods in this location take the direction indicated in Fig 18, and shown in Figs. 15 and

16, and if the cavity be cut as indicated in Fig. 17, the outer portion of the lower wall will be made up of short rods, the long rods having been cut across in burring, and these short rods will

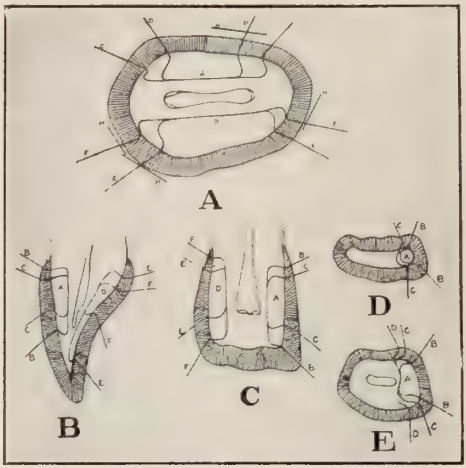

Fig. 16

be unsupported by the dentine and consequently make a weak wall that is liable to fracture or break away in either the filling operation or subsequently, as most operators have observed in cases of this kind.

Fig. 17

Fig. 18

Fig. 19

Fig. 19, the same tooth, shows in pencil the general direction of the enamel rods and how the short rods would be left unsupported. In the gingival third of the tooth the rods incline slightly

toward the gum; in the middle third they are more nearly horizontal; in the incisal, or occlusal third they incline incisally, or occlusally, and vary in abruptness of inclination according to the

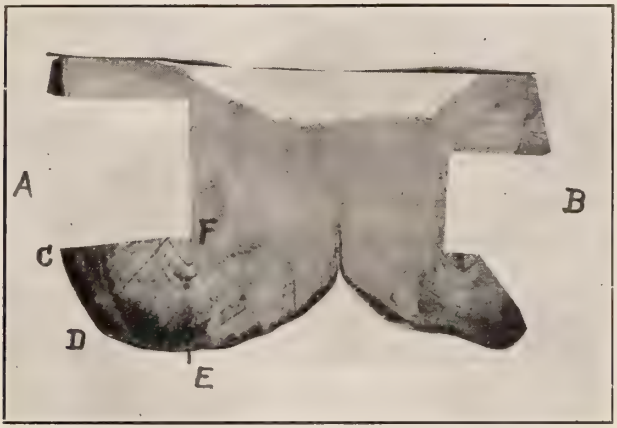

Fig. 20

length and amount of curve of the margin of the tooth toward the incisal or occlusal edge.

Fig. 20, A, a section from a bicuspid tooth, shows how a wall prepared as in Fig. 17 would leave unsupported short rods in that portion of the wall where the rods have been cut across in preparation. The dotted line shows the direction of the enamel rods and the direction the prepared margin should have followed to have made the strongest wall for the filling.

Fig. 20, B, shows the walls cut according to the direction

Fig. 21

of the enamel rods, and so far as the enamel itself is concerned makes the strongest margin.

But there sometimes is another factor that must be considered in preparing these cavities. The cusps and marginal ridges

are the strongest portions of a tooth's structure when intact, but when approached by caries the cusps of bicuspids and molars become weakened on account of the rods being inclined in such a way as to give but a small area of support upon the dentine.

In Fig. 20, the whole section from C to E, or D to E, has but a small area on the inner surface at F, compared with the outer. The inclination of the rods, running to almost an acute angle of the triangle formed by the direction of the rods over the cusp, and the interprismatic substance between the rods being

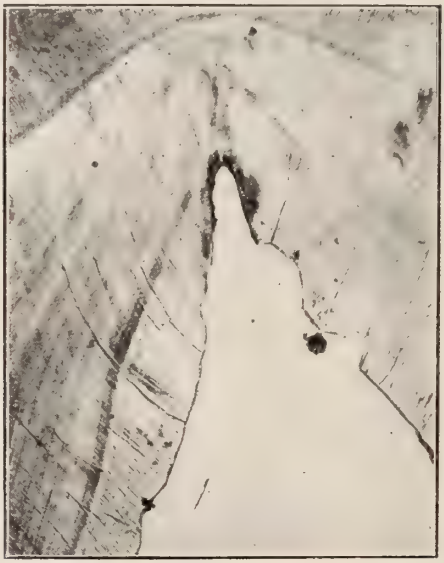

Fig. 22

weaker than the rods themselves, and the greater area on the outer surface, giving opportunity for great leverage, makes the cusp in this condition a weak point. Where such conditions exist it is better to cleave beyond the cusp and obtain a wall of enamel amply supported on the dentine.

In this connection it must be borne in mind that developmental grooves are also areas of weakness in enamel. If a cavity wall comes almost to such a groove, it is better to extend such cavity to that groove or just beyond to obtain the strongest wall. Fig. 18 might furnish an example of this, for in that specimen

the groove is abnormally well marked. If this precaution is not taken, especially where the grooves are well marked, and sometimes along the line of one or both of the grooves on a central incisor by close inspection one can find a minute check even though the grooves themselves are not prominent, the weakened corner of enamel is apt to be checked or broken away with results seen in Fig. 21.

In the preparation of cavities for filling, sometimes it is found that the enamel rods run toward the cavity, and in other

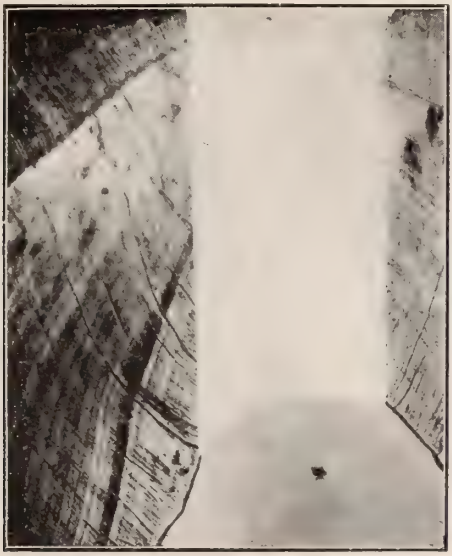

Fig. 23

instances away from the cavity. On occlusal surfaces the rods incline toward the cavity. This is shown in Fig. 15, and more plainly in the section photographed in Fig. 22. After making parallel walls to a cavity in this location, Fig. 23, we will find that the cavity walls have the greatest support possible, as the enamel rods forming the cavo-surface angle run uninterrupted to the dentine and are supported by shorter rods with their inner ends resting on sound dentine and their outer ends abutting the cavity wall. Parallel walls in such a cavity are all that is necessary so far as strength is concerned, but to protect the ends of the

rods from fracture while making the filling, the cavity margins should be slightly bevelled.

Proximal cavities and cavities on other axial walls, however, must be dealt with differently, for the rods incline away from the cavity. Fig. 20, B, is an illustration. On all proximal surfaces we find this inclination of the rods, and if the cavity approaches near the marginal ridge, we have a weak wall at that point, for reasons just cited above. It would insure a stronger operation to extend the cavity into the occlusal portion, making a compound cavity of it.

On the lingual surface of incisors one must watch closely the direction of the enamel rods, especially near the curve at the

Fig. 24

basal ridge, as illustrated in Fig. 24. Margins to axial cavities must be more carefully bevelled than those of occlusal cavities, for the inclination of the rods is greater, and we find more short rods, in this location, which must be covered by the filling for protection. Short, or partial, enamel rods are found on the axial surfaces of teeth, particularly near the marginal ridges, for the crown surface is much greater in area than the dentine surface, and the enamel rods themselves are as large in diameter at their outer as they are at their inner ends, leaving spaces at the outer ends to be filled with partial or short rods.

In the occlusal portions of teeth the opposite will be found, the short rods next to the dentine, especially where the plates of

the cusps join, forming a groove. And it seems probable that faults, so often found in the enamel structure at these points, are due to the arrested or non-complete development of the enamel rods owing to the manner of deposit and the peculiar structural arrangement of the surrounding rods.

In cleaving enamel it will be noticed that the enamel is not of uniform thickness on all teeth, but that it varies materially. On some teeth it is thick and on others comparatively thin. On some teeth at the gingival line it appears to be as "thin as paper" we might say for illustration. Fig. 25 shows a few teeth on which

Fig. 25

some portion of the enamel was cleaved with a chisel. In the incisors, C, D, E, some variation is shown. The enamel at the incisal edge of E, is thicker than in like position on C. The enamel over the basal ridge in E, and in D, is thicker than in similar location in C. On the lingual surface of D, the enamel is heavier throughout than on C. Notice the difference in the thickness of enamel in the bicuspids B and G.

The cavity in A shows the direction of cleavage of enamel in this location. Notice what a great inclination the rods have near the occlusal. A weak wall would be left here if, in the preparation of this cavity, it were not extended over into the occlusal

surface. H shows the direction of the rods near the gingival line. F shows direction of almost invisible checks that are here penciled over to make them appear in the picture.

To obtain the greatest strength in cavity walls, sound tooth

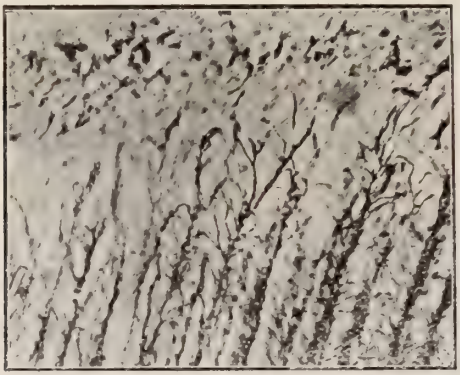

Fig. 26

substance is essential, and the operator in opening the cavity of decay should be sure that he cleaves to sound enamel substance.

Sometimes the acid, excreted by the caries producing micro-organisms, will penetrate through the whole thickness of enamel before the rods give way or fall apart. In other instances the penetration of acid may be only to a partial depth, but enough

Fig. 27

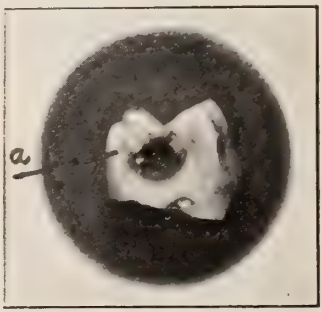

Fig. 28

to weaken the enamel. And again, when the bacteria gain entrance to the dentinal tubules and through their branchings (see Fig. 26), cause destruction of the tooth substance laterally as well as direct, we may find an acid disintegration of the enamel

rods at their inner ends, through backward caries, weakening the enamel in this section of the tooth, although its outer surface may have every indication of perfect structure.

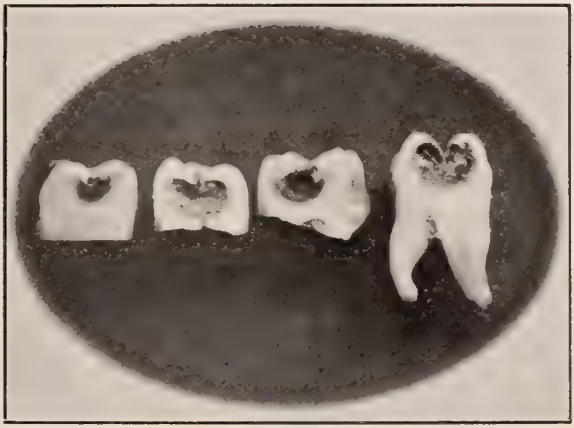

Fig. 29

It is therefore important, in the preparation of enamel walls for strength, to cleave beyond the line of acid penetration. Doctor Black's first requirement for strength in enamel walls, viz: "Enamel should be supported on sound dentine," should always be borne in mind in the cutting away of affected enamel structure.

Fig. 30

Fig. 27 is a drawing that shows the lateral extension of caries. Fig. 28, a tooth ground to expose the cavity of decay, shows the undermining of the enamel by caries. A semi-decalci-

fied portion of enamel extended quite a distance beyond the cavity proper, and will be seen at "a" in the engraving.

Fig. 29 shows a number of ground teeth where there was but a comparatively small opening through the enamel, yet caries is extensive in every direction, and overhanging enamel has little support. Fig. 30 shows the cavity as it appeared in the occlusal surface of a molar and as it was found after the roots had been excised and the tooth ground upward from the roots until the decayed portion was fully exposed, showing the comparative lateral extension of carious action.

There is one point more that should not be overlooked in the preparation of cavities for fillings, and that is the bevelling of cavity margins.

Fig. 31

Cavities need a greater bevel when located on axial surfaces than when on the occlusal, for here one finds more of the short enamel rods.

Using the chisel to plane and shape enamel walls and margins requires great care if a perfect margin be desired. In planing it will be observed that where the enamel rods are more or less broken apart, the margin will have a whitish appearance, for the rods dislodged by the chisel appear as a fine powder. Continue the shaving, or planing, until the enamel appears clear and vitreous and you will have made as good a surface to the wall as is possible.

If burs are used to shape enamel walls, or bevel the margins, the operator cannot tell anything about the direction of the rods, or whether he is leaving short rods at the outer margin to weaken it.

Do not bevel your cavity margins too extensively or you will find that the finished filling will have a feather edge along the bevelled margin that is liable to be easily curled or raised from the margin. Fig. 31, A, shows the feather edge of a filling where the cavity has been bevelled too much. This is apt to occur when disks or strips are used for bevelling instead of a sharp chisel. Fig. 31, B, shows less bevel and a more substantial margin to the filling.

Use judgment and be careful and particular about the little points in preparing enamel walls and margins and your operations will show the results of this painstaking care.

SUGGESTIONS

CURVING THE DONALDSON PULP CANAL CLEANSER.

S. J. Spence, Chattanooga, Tenn.

The Donaldson broaches, or cleansers, come to us, as we know, straight. Then there are two lengths of them, one of which is comparatively short and made, apparently, for being used at a right angle to the broach's handle. In this position they are adapted for working into the posterior canals. But it is not always an easy matter to work these broaches at a right angle. Besides, this gives but little opportunity to rotate the cleanser in the canal. On the other hand, it is some times impossible to center a posterior canal with one of the broaches, long or short, held in a line with the handle. Pondering over these difficulties, I hit upon the simple plan, which, perhaps, has occurred to many others, of bending the long broach into a curve, and so adapting it to reach otherwise inaccessible canals. Henceforward, I discarded the short broaches.

Now, the chief merit of this simple plan did not at first occur to me. It is this: By partially rotating a curved cleanser while in the act of working it up and down in the canal, the curved shape causes it to reach all portions of the canal in a way that a straight one will not. Those flat canals, especially, get the benefit of this. A straight cleanser will run up and down their centres and leave their narrower portions untouched, while the curved cleanser crosses the canal and bears on opposite sides of it. I now use nothing but the long curved broach.

Another idea grew out of this first We know, that in some cases, the broach fails to penetrate as far as we have reason to suppose is the entire length of the canal. It goes to a certain point, and there stops dead. Perhaps this is an abnormally short root, but much more probably it is one with an abrupt turn. Or possibly a drill has been used in the root and at the curve of the

canal a little socket has been drilled, reaching just beyond the curve; and into this socket the point of your cleanser goes. What is the remedy? This: With your foil carriers, or pliers, grasp the cleanser near its hip and bend about a sixteenth of an inch of its length to an angle of about 45 degrees. This may, or may not accompany the previously mentioned curve. Now try the canal again, rotating slowly as you work the broach up and down, and if there exists any divergent root-canal, this bent hip will probably find it and open it up.—*Hints.*

SETTING OF AN INLAY.

J. E. Waterbury, Robles, Cal.

In a properly fitting inlay the space occupied by the cement is almost *nil*, and for this reason it should be handled most carefully when pressing at home, lest in rocking and readjusting it after the excess is squeezed out, the contact between tooth and inlay be broken, in which case I believe it will *never reunite properly*, and I think that was where my fault lay; in my anxiety to get my edges exact I sometimes pressed it slightly one way or another after having once carried it firmly to place. My method now is to place the inlay in its cavity and gently press it *nearly* to place, then wipe away the excess of cement with a bit of spunk, take a fine exploring point and carefully locate the edges, adjusting it delicately so that it will rest exactly in its seat, then force it firmly to place with wedge, ligature or hand pressure, according to its position, and see that it *never stirs again* until the cement has set, and it is much better to varnish it over and postpone the finishing until the next day, though it is very necessary that all points of contact be removed before dismissing the patient, else a premature closing of the mouth will surely dislocate the filling; or, even though sufficient care were exercised by the patient to prevent that disaster until cement was hardened, the porcelain would be very apt to be chipped from the occlusion of the teeth in mastication before the subsequent finishing was completed. I have found it desirable to have the patient try all possible biting movements while the inlay is held in place with an instrument *before setting*, using a bit of carbon paper to mark any points of contact and then to dress off these points before cementing.—*Extract Pacific Gazette.*

FORCING THE GUM FROM DEEP BUCCAL AND LABIAL CAVITIES.

J. Mills, Brantford, Can.

When the cavity extends far up under the gum margin the following method renders it a comparatively painless operation: Pass a waxed ligature twice around the tooth containing the cavity. Insert one edge of a large sized roll of cotton under the ligature and draw the first lap tight. Press the remainder of the roll against the gum over the cavity, tie the second lap of the ligature over the center of the cotton and leave for a day or two. When the patient returns it will generally be found that the gum is entirely pressed back from the cavity. Before removing, dry the cotton well and saturate it with adrenalin chloride to stop hemorrhage. Dry the cotton again and saturate with cocaine for a few minutes. The cotton can now be removed and the gums painted with collodion to prevent weeping. Use a narrow clamp in such cases.—*Review.*

TO REPAIR A HOLE IN A CROWN.

O. Martin, Ottawa, Can.

A small button of pure or coin gold hammered over a hole in the drawplate, corresponding in size to the hole in the crown, makes a convenient rivet which can be attached with solder, or, if a bridge is involved, can be riveted.—*Review.*

SAVE YOUR WORN SCREW MANDRELS.

The threads of the ordinary screw mandrels become worn very quickly. These old mandrels can be easily made useful for carrying carborundum wheels of various sizes by smearing sealing wax over the exposed end of the screw after the wheel has been placed upon it, and while the wax is hot forcing it into the socket of the mandrel with a strong screwdriver. The shank can be held in a vise or a pair of pliers while the screw is being forced into it and after the wax becomes cool it will be found to hold securely. Fibers of cotton wrapped around the screw will sometimes hold when the operator is in a hurry.—*Review.*

TOOTH POLISHER.

Doctor Brockway.

I wish to call attention to the value of tecum fibre as a most efficient article for the purpose of polishing the approximal surfaces of the teeth where the floss silk and tape are generally used, this being fine, strong, and charged with native grit, silex, like the cortex of a reed, making it most admirable for the purpose required. It can be drawn between the most closely set teeth with the aid of a little vaseline, in extreme cases, which does not seem to impair its efficiency.—*International.*

TO DETERMINE THE SHADE OF FACINGS.

R. L. Graber, Peoria, Ill.

Keep on hand a small piece of plate gold, with a slot cut through it large enough to admit the pins of the facing. When selecting a facing place the gold in position on the back and note the change in color produced by the gold. The edges of the gold should not extend beyond the edges of the facing. If platinum is employed for backing, a thin piece can be prepared in the same manner.—*Review.*

ARGYROL.

As an application to inflamed gums after the removal of calculus try argyrol. It is very rapidly absorbed into the tissues, and does not permanently stain the teeth like the nitrate of silver. A small piece of the crystal placed in a pyorrhea pocket will be found an excellent dressing.—*Review.*

CARBORUNDUM FLOUR.

G. Martin, Berlin, Ger.

With regard to carborundum flour used in connection with wheels, I have found every powder placed on the market prepared between rolls and it does not give sufficient cutting surface as if prepared under a blow. Powder the carborundum yourself, and if that is done it will be found to be a material that will cut ten times as fast as the carborundum flour on the market.—*Review.*

PULP CANAL DRESSING.

Homer Almon.

Mix iodoform and simple cerate to a paste and add a few drops of oil of cinnamon to disguise the odor In the paste form it is convenient, easily controlled and will be found useful in certain pulp-canals.—*Review.*

A SUGGESTION ABOUT SYRINGING THE MOUTH.

M. G. McElhinney.

It took years to teach me that in syringing the mouth, the less one interferes with the free action of the muscles the less likely the water is to run out at the corners.—*Review.*

A METHOD OF TOOTH RESTORATION.

W. A. Robertson.

In cases where there is almost complete destruction of the crown of a molar, and the expense of a gold crown is beyond the means of the patient, I offer the following method for restoration: Grind down the walls of the crown to make sufficient space for a substantial cusp. Take an impression and bite with wax or modeling compound, and articulate. After separating build up the crown with plaster and carve the cusps to occlude properly, the same as for a gold crown. Take an impression of the acclusal surface in modeling compound, chill thoroughly and fill with amalgam. The amalgam must be allowed to set thoroughly, making a solid amalgam cusp. At the next sitting, enlarge the pulp-chamber with a large inverted cone bur in the right-angle hand-piece and fill with amalgam which is not too stiff. The amalgam should be built high enough to allow for a surplus when the cusp is in the correct relation. The base of the cusp, which should be made level with a file, is now smeared with soft amalgam and placed in position in the mouth, after which the patient is requested to close the teeth firmly upon it to force it to its proper position. The walls may now be finished with a smooth burnisher, and if quick-setting amalgam has been employed the result is a perfect occluding, solid, amalgam crown and one that will be serviceable. The amalgam can be polished at a future sitting.—*Review.*

GUIDE FOR RESTORING FACIAL EXPRESSION.

Oliver Martin.

A lady patient, for instance, has been wearing full upper and lower dentures for some years. She is dissatisfied with her appearance and desires to have the correct facial expression restored. In such a case, without a guide, we can produce an expression which we think is correct and still be far from the right one. To follow the patient's directions and accomplish anything, it may safely be said to be impossible. A photo of the patient taken previous to the extraction of the teeth, if it can be procured, will be found a safe guide for the operator. Study the photo carefully and refer to it while constructing the case. It will assist in cultivating your idea of that which is artistic, and the result will please your patient.—*Review.*

SEPARATING TEETH.

W. C. McGowan.

First remove debris—if a molar or bicuspid cut marginal ridge to permit this. Place waxed shoe-thread between the teeth and beyond the cavity. Fill the cavity with dry cotton using a serrated plugger and with firm pressure pack the cotton into the cavity. Tie the waxed ligature around the cotton as tight as possible and leave as long as is deemed necessary. If much separation is required repeat the operation in three or four days. This was suggested years ago and is the most humane, safe, effectual and easy method of separating teeth. Gutta-percha is slow and in a large number of cases ineffectual. Rubber and wooden wedges are crued devices and should be avoided.—*Review.*

HOW TO MAKE ORTHOFORM COTTON.

Make a saturated solution of orthoform in alcohol and saturate cotton with this solution. Dry and put in a convenient bottle for use. It is very useful to pack the alveoli after extraction to prevent pain, also other wounds that are liable to be painful, such as pyorrhea pockets, exposed pulps, lacerated gums after extracting impacted third molars, etc. It stops pain and hemorrhage and leaves no bad after-effects.—*Register.*

TO PREVENT CLOGGING OF NERVE CANAL DRILLS.

F. J. Fernandez.

Another danger is that of clogging up the drill-head by pushing debris before it. This is the result of working too rapidly. To avert this risk the drill should be frequently withdrawn, and the constant use of the chip-blower is advised, to clear away the debris. In cases of curved roots, such as these, careful inspection of the canals should be insisted upon, and the insertion of broaches and fine platinum points will give the operator some idea of the shape he will have to contend with.—*Cosmos.*

ANCHORAGE FOR FILLINGS.

C. N. Johnson, Chicago.

In preparing cavities, the question of anchorage becomes an important consideration in guarding against failure. Fillings frequently fail by being forced out of the cavity under the stress of mastication when the anchorage form is not such as to hold the filling mechanically in position. To avoid detail it is sufficent merely to state that fillings anchored upon flat walls will sustain greater stress without movement than when anchored upon curved walls, and that the area of the seat of the filling should be proportionate to the amount of resistance it is expected to withstand. An inadequate resistance area will result in the filling moving slightly under stress even if it is not entirely dislodged, and this movement will soon lead to a leak around the filling, which invites failure. In line with this idea all seat walls, which are calculated to receive stress, should be placed as nearly as possible at right angles to the direction in which the stress is applied. Example: the gingival wall of proximo-occlusal cavities should be horizontal and flat instead of concave.—*Review.*

AN EFFECTIVE OBTUNDENT.

E. D. Rabus.

All dentists seem to be looking for an obtundent that will really obtund. I have found that by making a temporary filling of Oxpara covered with gutta-percha or cement and allowing it to remain in the tooth for a day, very good results can be obtained.

FUSING OF PLATINUM SOLDER.

R. J. Husband, Toronto, Can.

The fusing of platinum solder is made very simple by using a cylinder of N_2O, instead of the bellows or compressed air. Attach it to the air-nozzle of the blow-pipe, and an S.S.W. tooth, or a small piece of pure platinum, can be fused in a few seconds. —*Dom. Journal.*

CARE OF GATES-GLIDDEN DRILL WHEN NOT IN USE.

F. J. Fernandez.

Their ability to rust, even after being thoroughly cleaned, warns us that they need to be carefully packed away when out of use; this seemingly trivial matter is of the utmost importance.

I prefer to keep them in a glass cylinder, such as are used for containing certain forms of gold. A pledget of absorbent cotton wool is to be saturated with lysol and the oil used in the Edison battery in equal parts, and placed at the bottom of the cylinder. Into the mass thus formed the heads of the drills should be buried, the whole being sealed up with the cork of the bottle. When acids have been employed in the treatment of the canals—especially sulfuric acid—a pinch of sodium bicarbonate sprinkled in the mass will be of assistance, owing to its neutralizing effects. —*Cosmos.*

MANAGEMENT OF THE MATRIX IN INLAY WORK.

W. N. Murray.

For the matrix I use about No. 40 double refined rolled gold, and to better enable me to get the proper sized piece of gold for matrix, I usually take an impression of the cavity in wax. After burnishing the matrix as near to perfection as possible, crowd the wax impression that you have taken of the cavity into the matrix in the cavity and trim the wax in the matrix the shape that you desire your inlay to assume. Gently remove the matrix containing the wax from the cavity, and to properly get proximal space and point of contact, place a piece of pure plate around the wax filling, corresponding to the proximal surface, and gently bring the same with warm pliers up to the margins of your matrix. Before

investing, coat the outside of matrix with rouge dissolved in alcohol, to prevent any possibility of any solder flowing upon this side of the matrix.

The best investment for this work I find to be the S. S. W. sump.

In the flowing of the solder, great care should be taken not to melt any portion of the matrix. A very wise precaution is to fix solder by burning upon the surface of same, wet ground borax in a Bunsen flame. In finishing the inlay out of the cavity, do not finish directly up to the line indicated by the matrix lapping over the margins of the cavity, but leave a slight feather edge all around the margins and put the final finish after the inlay has been set in the cavity.—*Review.*

FOR THE SENSITIVE NECKS OF TEETH.

"Make an application of a saturated solution of carbonate of potassium in glycerine. We do not know who originated this treatment, but it has proved very effective, and it does not discolor like the nitrate of silver. Apply as often as seems necessary till sensitiveness is relieved."

This application was selected by me from a great many experiments to obtain something efficient and yet decidedly *less inflictive* than chloride of zinc, and that not only for the necks of teeth but as well for any exquisitely sensitive dentine.—*Gazette.*

PEROXIDE AND LIMEWATER.

The dilution of peroxide with an equal volume of lime water corrects any acid condition that may exist, retards any destructive influence the H_2O_2 might have on granulations, and does not detract from the efficiency of the remedy.—*Forum.*

RUBBER CEMENT.

Take large mouth bottle, cut up pure gutta percha or rubber, cover with disulphide carbon, let stand 24 hours, it is then ready for use, can be thinned with gasoline.—*Hints.*

TO COLOR PORCELAIN BODY AND CEMENT.

A very minute quantity of oxyphosphate of copper powder may be mixed with the body to obtain the deeper shades. It is equally efficient when added to the zinc phosphate cements and is needed to deepen the shade in many cases when setting inlays. Many otherwise perfect inlays are made conspicuous by cement too light in shade.—*Forum.*

A METHOD FOUND USEFUL IN FLASKING PARTIAL VULCANITE CASES.

A. S. Burke.

The ordinary method of procedure in partial cases when a pink rubber facing is indicated is to flask to the edge of the wax, drawing the teeth on the reverse side of the flask. This is all right, provided one is able to close the flask after the rubber has been packed just as closely as it was with the wax in position. There is often difficulty in doing this; consequently, in a case where the molars or bicuspids are to be restored, no matter how careful one has been in the matter of the articulation after the case has been vulcanized and prepared for the mouth, failure to close the flask absolutely tight will cause the teeth to be slightly too high and necessitate the grinding of the cups of the artificial teeth.

This difficulty may be very largely obviated by flasking right up over the teeth, holding them in position just as though no pink facing was to be used. When the flask is separated a stream of boiling water poured on the wax will remove it thoroughly, and the pink rubber facing can then be packed between and under the teeth very nicely. Then the flask is closed in the ordinary way, and any failure to bring halves of flask together will not effect the articulation, but will simply give additional thickness to the rubber portion of plate.—*Penn. Journal*

TO STRENGTHEN BASE PLATE.

Pure sheet tin should be used under base-plate wax on a model so as to strengthen it, while being tried in the mouth.—*Hints.*

A HOME MADE POLISHER.

D. E. McConnell, Gastonia, N. C.

The most useful polisher for cleaning teeth that I have ever used is made from the butt of an old hyperdermic needle and a right-angle fissure bur, in this way: Saw off the needle close and insert the bur, securing it with soft solder. This gives you your porte-polisher. Over this stretch a section of cheap white rubber tubing, size three-sixteenth inch about five-eights inch long. Then place in the right-angle hand-piece and, while running the engine, hold inside of the tubing a little cone of sand-paper, a folded dish does nicely, so as to chamfer the edge of the tubing from within to a thin edge. This thin edge goes under the gum in a way no rubber cup or briste brush can equal and the right-angle handpiece allows free use of the appliance on all lingual surfaces, on the buccal surfaces of molars and bicuspids. The appliance should be made as short as possible, and an old right-angle hand-piece be kept to be used solely for cleaning teeth as the pumice works into the bearings, but accuracy of motion not being necessary, a hand-piece not fit for other work will do this well.

A similar instrument for the straight hand-piece with a few sticks of orange wood and a D. D. Smith hand porte-polisher, to touch the few places left by the engine polishers, completes the outfit, and does away with expense for brush wheels, etc., as the cheapest tubing is the best for this purpose.—*Dental Hints.*

TO DRILL CAVITIES IN PORCELAIN TEETH.

Temper ordinary drill and keep wet with the following: Oil of Turpentine 1 ounce, Gum Camphor 1 ounce, Aqua Ammonia 2 drachms, Kerosene Oil 2 drachms, Sulphuric Ether 3 drachms. Keep well corked.

TO WASH OUT WAX FROM INVESTMENTS.

X. Dodel.

Place the investment in boiling water and through a piece of *rubber tubing* of suitable length blow upon the wax. The bubbling rapidly dislodges all particles of the wax.

IMMEDIATE REPAIR OF GUM SECTION.

The pins in the old section were broken off. With diamond drill cut retention cavities where pins were. Having secured platinum pins from other plate teeth, reset them in the gum section, using amalgam for filling material; then vulcanized.—*Forum.*

PARTIAL PLATE—CLOSE BITE.

In making a partial rubber plate, when the bite is close, solder a flange of platinoid under the heads of the platinum pins, perforate it with holes and let it extend in the body of the plate. If carefully heated "rubber teeth" will not crack when soldered with fine gold solder and the platinoid will not melt under 20 carat fine solder.—*Hints.*

TO REPLACE BROKEN FACINGS.

C. W. Siefken.

Grind pins on backing. Then drill two holes to receive pins in facing, the facing having been ground to fit backing. Set with cement and rivet with plate punch and block of wood, being careful to keep wood between facing and punch. By carefully turning punch with point in contact with pins the facing can be made as firm as when first set. Finish pins with disks.—*Brief.*

HOW TO SOFTEN MOLDINE WHEN HARDENED.

P. W. Smith, Palmyra, N. Y.

Break into small pieces, place in an old glass, pour in considerable water, with half a teaspoonful of glycerin, and let stand in a warm place. The water dissolves the lumps and evaporates, leaving the glycerin thoroughly permeating the moldine. A little kneading or further evaporation finishes the task and makes the material as good as new.—*Era.*

AFTERMATH

PERSONAL AND MISCELLANY.

Wanted to Be Stuffed.—A Paris dentist who committed suicide left instructions that his body was to be stuffed.

Accident.—Dr. W. A. Jones, Spooner, Wis., had one eye seriously injured by the flying head of a match he was lighting.

Fined for Practicing Without a License.—T. H. Culhane, East Peoria, Ill., has been fined $25 and costs for practicing without a license in that State.

Maine Dental Society.—Following is the list of officers chosen: President, R. W. Bickford, of Rockland; vice-president, F. H. Moore, of Calais; secretary, H. A. Kelley, of Portland; treasurer, E. J. Roberts, of Augusta.

Again Editor.—Dr. A. W. Harlan, now of New York, is again in the editorial harness. He has taken editorial charge of *The Journal of Oral Surgery and Dental Medicine* to be published by the Dental Medicine Co., New York.

Will Travel.—Dr. Clare Frame, Columbus, Ohio, has sold his dental practice in that city and will act as travelling salesman for The Columbus Dental Manufacturing Co., manufacturers of the Steele adjustable tooth facings.

Will Recover Certificates Issued Illegally.—It is understood that the New Hampshire Board of Dental Examiners will take steps to recover thirty or more licenses that it is said were issued illegally or without the required examination.

Delegates to the I. D. F.—The Governor of Missiouri appointed Dr. B. L. Thorp, Saint Louis, and Dr. J. D. Patterson, Kansas City, Mo., delegates to represent the State at the International Dental Federation which met in Saint Louis August 26 and 27.

Obliged to Leave the State.—T. C. Smith, Ohio City, Ohio, has been driven from the State by the Board of Dental Examiners. It is said that he obtained his license to practice through false affidavits and the

Board took the matter up, revoked his certificate and obliged him to leave the State or suffer legal prosecution. He left.

Mississippi Dental Association.—Officers elected are: L. G. Nisbit, Aberdeen, president; W. H. Reaben, McComb City, first vice-president; J. E. Frazier, Canton, second vice-president; E. N. Bigham, Pontotoe, secretary; L. B. McLaurin, Fayette, corresponding secretary; C. C. Crowder, Kosinsko, treasurer.

Passed the Examining Boards.—In Ohio, eleven out of nineteen applicants passed the Board at the last examination. In North Carolina, twenty-seven out of twenty-eight passed. In Massachusetts, fifty-five out of one hundred and three passed. In Pennsylvania, two hundred and thirteen out of two hundred and eighty-six passed.

Southern California Dental Association.—The next annual meeting of the Southern California Dental Association will be held October 24th, 25th, 26th at Hotel Del Coronado, San Diego, Cal. This session will be largely attended, as many important and interesting features will be presented to the society.—*C. M. Benbrook, Secretary.*

Died.—Mrs. Elvanard Fales, D. D. S., who graduated from Illinois College of Dentistry, 1901, died July 28th of cancer of the liver; Dr. A. F. Weston, Kansas City, Mo., died suddenly July 28th, aged 32; Dr. J. S. Simmerman, Millville, Pa., died July 26th, at the age of 72; Dr. J. M. Sherman, Storm Lake, Ia., died from the effects of paralysis, July 4th.

Quits College Work.—Dr. W. H. Whitslar, for many years secretary of the Dental College, Western Reserve University, Cleveland, Ohio, and Professor of Pathology in that institution, has resigned his college position and will hereafter give his undivided attention to the practice of his profession. Doctor Whitslar's friends will be sorry to learn of this action, for he has been a great worker and prominent in college matters and will be missed in the various college associations.

Retaliation.—Dr. M. M. Keep, of Bellefontaine, was arrested July 5th for "assault with intent to rob," and "assault with intent to do great bodily harm," and sued for $2,000 damages. In trying to collect a balance due on a set of artificial teeth, and failing to get any satisfaction, he asked the patient to see the teeth; and when she handed them to him, he put them in his pocket and walked away, telling her she could have her teeth when she paid the balance due on them. October term of court the doctor will have his trial.

Cause of Action.—Hicks—"Pulling, the dentist, has brought suit against one of his patients for damages caused by the extraction of one of the patient's teeth."

Wicks—"Guess you mean the patient has brought suit against the dentist."

Hicks—"Mean what I said. Doctor Pulling declares he was over-persuaded by his patient, and he estimates if the tooth had been left in it

would have been worth at least $150 to him to keep it in working order."—*Boston Transcript.*

Man with a Dirty Mouth.—A man who commits suicide may rid the world of a nuisance, but a man with a mouth of pus and decay fills the world with a nuisance, puffing into the nostrils of his associates contamination, disease, and stench. If suicide be a crime, so is denticide. I have taken the liberty of coining the word "denticide" for wilful self-destruction of the teeth through neglect, and I pray you, gentlemen, its adoption. I had rather live within the sound and scent of a merry bubbling sewer than absorb the air laden with the evacuations of the oral cavity of such a man.—*Dr. Ward in Cosmos.*

Venezuela Has New Dental Law.—Venezuela has passed a law that foreigners who "come to the republic and want to be admitted into its territory are obliged to present to the highest civil authority of the place where they arrive the documents identifying their personality and attesting good conduct, signed and legalized by the authorities of the last place from which they come." "American dentists who came here without passing an examination before the board of dentists at Caracas (they had practiced their business without any molestation at Caracas for months) were the first to suffer by this law," reports F. H. Plumacher, consul at Maracaibo.

Bronze Age Dentists.—A German investigator has discovered that there were dentists in the Bronze Age; not mere pullers of teeth, but experienced dentists. Perhaps he may deny that there was found on a recently excavated bronze tablet that had every appearance of being the doorplate of a dental surgeon, the following inscription:

"I'm the surgeon who fills teeth with bronze;
Come in, bring your daughters and sons;
I'll inject some cocaine,
And you'll not feel the pain;
I give trading stamps, also coupons."

Appointed Dentist to the Sultan.—Dr. Frank Bostwick has returned to his home in Coshocton, Ohio, on a short vacation after two years in Spain. While there he had the distinguished honor of being assistant dentist to his highness, King Alphonse, and not only looked into the mouth of that royal personage but also cared for the teeth of the Infanta Eulalie. For the last three months he has been independently established at Gibraltar. He will return this fall for a still greater career as dentist to his highness, the sultan of Morocco and his harem, at Fez, a six-day journey from the coast by caravan. The stipulations are unique and state that while attending to the teeth of the royal favorites, two eunuchs will stand over him with battle axes.

Dental Office Thieves.—Reports from various sections of the United States show that dental office thieves are still busy. Since our last month's report the following dentists have suffered loss through their

depredations: W. A. Alexander, Carlinville, Ill.; H. E. McClalland, Middletown, Ohio; A. L. Alexander, Aberdeen, Miss.; Riley & Snyder, Ft. Scott, Kan.; C. Williams, Terre Haute, Ind., also N. Y. Dental Parlors, Wabash Dental Parlors. At Saginaw, Mich., T. E. Howsen, W. E. Moore, R. P. Allen, F. C. Millish, H. H. Madigan; E. Manous, Minneapolis, Minn.; C. W. Spring, Pontiac, Mich.; W. H. Hague, Delaware, Ohio; James and Gallagher, Winona, Minn.; A. Ritter, Utica, N. Y.; S. E Stroud, J. K. Douglas, and J. T. Nicholson, Sandusky, Ohio.

A Dental Symphony.—Say nothing of your confrere that you would not have him say of you.

Lay carefully the foundation of true merit, and build upon it as if you were to live for ever.

Look not with envious eyes upon your neighbor's practice, but attend diligently to the establishing of your own.

Avoid gossip with your patient. Talk sense or hold your peace. Above all things say nothing that can be repeated to your detriment.

Never malign another practitioner's good name that you may the better establish yourself in the eyes of your patient, for such an unseemly method may serve eventually as a boomerang to knock out the thrower.—*M. W. Sparrow, Dominion Journal.*

The Progress of Teeth.—Little Margaret had a loose tooth which her father wished to remove, but she objected so piteously that he postponed the operation. Some time later the child's mother heard her tell a playmate that it was not the pain she dreaded so much as the loss of the tooth, for she did not know that another would grow in its place.

"Why, Margaret," said the playmate, with a touch of scorn for her companion's ignorance, "don't you know that everybody grows four sets of teeth?"

"Do they?" Margaret asked in glad surprise.

"Of course they do. First, they grow their baby teeth, like yours; then they grow their second teeth, like Brother Charley's; then they grow their wisdom teeth, like mamma's; and then they grow their false teeth, like grandma's."—*Brooklyn Eagle.*

Just Married.—J. C. McConkey, Canton, Ohio, to Miss Rebecca E. Douds, of Canton, June 22. C. F. Monroe, Buffalo, N. Y., to Miss Mary G. Ross, of Auburn, N. Y., June 29. Will Nichols, Medina, Ohio, to Miss Eurie Stanberry, Medina, March 26. C. A. Priest, Marion, Ind., to Miss Cora Ledbetter, of Swayzee, Ind., June 23. J. C. Wood, Shirley, Ind., to Miss Edna Kirk, Kennard, Ind., July 13. Frank Warren, Painesville, Ohio, to Miss Norma Richards, of Bellevue, Ohio, June 25. P. R. Feigel, Louisville, Ky., to Miss Lillian B. Neuner, July 11. C. B. Frazier, Cottonwood, Minn., to Miss Cornelia Brownell, St. Louis, June 28. Chas. Smith, Ukiah, Cal., to Miss Myrtle Graham, of Cloverdale. J. E. Ackley, Canton, Mo., to Miss Annie B. Hampton, Canton, July 14. H. C. Stover,

Harrisonburg, Pa., to Miss Erna E. Koch, Columbia, Pa., June 15. L. A. Bryan, Lancaster, Ohio, to Miss Daisy Butler, Lancaster, June 22.

Recent Patents of Interest to Dentists.—

762877—Arm for dental chairs, Arthur W. Browne, Princebay, N. Y.

763385—Swaging or fitting dental plates, Alvin L. Fisher, New York, N. Y.

763918—Guard for dental tools, Roy L. Magoon, Graceville, Minn.

764528—Artificial denture, Oliver C. Haldeman and J. R. Haldeman, Kansas City, Mo.

763986—Top or closure for tooth-powder bottles or cans or other containers, Henry B. Kent, New Brunswick, N. J.

764022—Dental cuspidor, Henry E. Weber, Canton, Ohio.

765084—Dental matrix, Samuel E. Knowles, San Francisco, Cal.

764871—Dental process, Manley A. Sparks, Huntsville, Ala.

Copies of above patents may be obtained for ten cents each by addressing John A. Saul, Solicitor of Patents, Fendall building, Washington, D. C.

California Dental Law is Constitutional.—The Supreme Court has decided that the dental law in California is constitutional. Henceforth the Board of Dental Examiners will have all the power it has claimed in the issuance of licenses to practice. The arguments of the unlicensed dentists that the laws were discriminatory are shown to be inapplicable. The contest was instituted by those who could not get licenses from the State Board. The matter was carried to the Supreme Court on a petition for a writ of habeas corpus in favor of C. H. Whitley, who was arrested for practicing dentistry without a license. The court holds that while the law gives the Board of Dental Examiners great power, the Legislature has the right to impose such restrictions as it may choose when the public welfare and health is involved. Dentists who were practicing prior to the passage of the act and those who are graduated from schools of recognized standing may secure licenses under the law at the will of the board.

Identification Tooth Charts.—Dr. A. H. Thompson suggests the following "tooth chart," to be filled in and placed on record with life insurance companies, rogues' galleries, etc., which could be used by other dental experts for identifying either dead bodies or criminals:

(a) Curve of arch—round, square, or V-shaped.
(b) Width of arch—from outside surface of first upper molars.
(c) Depth of vault from grinding faces of molars.
(d) Color and texture of gums, peculiarities of ridges in roots.
(e) Size of teeth.
(f) Shape of teeth—wide, narrow, long, short, etc.
(g) Color of teeth.
(h) Irregularities.
(i) Teeth totally absent.

(j) Fillings in teeth.
(k) Unfilled cavities.
(l) Diseased or dead teeth.
(m) Artificial teeth crowns.
(n) Artificial teeth on plates.
(o) Miscellaneous pecularities.

Judge Refuses to Interfere in Dental Cases.—Judge Hanford, of the United States Court, has refused to interfere with the prosecution by the Washington State Board of Dental Examiners of "non-ethical" dentists who have refused to take out a license, as required by the State law. Samuel R. Stern, attorney for the State Board, received from Seattle a copy of an opinion rendered by Judge Hanford in which the court denied the application of H. C. Littoy, a non-ethical dentist, convicted at Seattle of practicing without a license, for a writ of habeas corpus. Judge Hanford holds that there is no occasion for the interference of the federal court in prosecutions under State stautes unless the invalidity of the statute upon which the prosecution is based is clearly apparent. Such a condition, he holds, does not exist in the dental cases, especially as the constitutionality of the statute is being tested in the State Supreme Court. Until that court has passed on the matter, Judge Hanford says the federal courts would not be justified in releasing a prisoner convicted in the lower State court. The court further remarks that the police power of the State undoubtedly guarantees to it the right to prescribe reasonable regulations under which sufferers may be treated. Judge Hanford's decision is regarded by the ethical dentists as a big victory for them.

Don'ts on the Use of Hot Air.—Don't remark at dental conventions or elsewhere that you never charge less than $15.00 for a gold crown, nor less than $10.00 for a gold filling. Young practitioners might believe it, while older practitioners might persuade you that Toronto is too small for such a genius.

Don't attribute unworthy motives to another practitioner because he joins some society, or because he attends church. The man who emits this variety of "hot air" usually spends Sunday at the operating chair. He finds it pays better.

Don't think you are too busy to attend dental meetings. The men who accomplish most and are really the busiest men are seldom heard to remark, "I am too busy."

Don't talk shop. If you talk about your work when you are out of your office, wise ones will know that you do not get enough work when you are in your office.

Don't try to impress people with the magnitude of your practice by remarking that you have appointments extending over the two following months. It may be that the man at the next corner does just as much work, and yet, because of greater executive ability, have his appointments only two weeks in advance. This latter course will be found more satisfactory to both dentist and patient.

Don't criticise adversely every piece of work you see. You might

inadvertently happen on a piece of your own and have difficulty in making explanations.

Don't forget it takes a "rubber" bulb to force the hot air. If you are in the habit of dealing in this commodity don't look surprised if some fellow says "rubber." The market value of a hot air syringe is such that every dentist can afford to have one, *and always use the syringe.* Then it may not be said of us as it was of the Chicago policeman, "He was too chesty."

Finally, don't throw stones at another dentist, because we all live in glass houses.—*Dominion Journal.*

More Dentists Who Appreciate a Good Thing.—"Please continue sending me The Dental Summary until further notice, which I think will be a long time coming."—Dr. W. T. Kraty, Burlington, Iowa.

"Continue sending The Dental Summary until I order it stopped, as I cannot afford to miss any of the numbers."—Dr. P. Oppel, Cheyenne, Wyo.

"Will say that your journal is as good as the best."—Dr. F. Fischer, San Francisco, Cal.

"Please send me a bill for The Dental Summary each year as I might neglect to renew my subscription and I would not like to loose a single number."—Dr. W. W. Chisholm, Anderson, S. C.

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"Enclosed find $1.00 subscription for The Dental Summary. I enjoy reading The Summary very much."—Dr. Henry G. Fischer, Philadelphia, Pa.

"I enclose subscription for The Dental Summaary which has made such progress that it is looked upon as one of the choicest."—Dr. M. L. Ward.

"Could not get along very well without The Dental Summary."—H. J. Shaffer, Wampum, Pa.

"The Dental Summary is all right—none better, and I take three others."—C. R. Calkins, Perry, N. Y.

The above are but a few of the hundreds of commendatory letters received from delighted subscribers.

Do you take The Summary? If not, it is to your interest to do so.

DENTAL BOARD EXAMINERS' CONTRIBUTIONS

EXTENSION FOR PREVENTION.

BY DR. GEORGE S. STAPLES, SHERMAN, TEXAS.

Member of the Texas State Board of Dental Examiners.

We have had articles galore on the subject of extension for prevention in the last few years. But according to my idea but few, if any, have hit the "key-note" of the subject. I have often been asked the question, "do you believe in extension for prevention?" I say "yes, and no." In the sense that it is meant, I do not. In a practical way I do, and I hope in this article to be able to satisfactorily explain my meaning or bring out my ideas of extension for prevention and make the matter plain to all readers, and in order to explain matters I will begin with a "brief" experience of some thirty-six years of practice.

When I first entered the profession, in 1866, I noticed the difference in the size of my fillings and those put in by the majority of dentists whose work came under my observation. Mine were generally a great deal larger than those of other dentists, and I wondered for years how it could be. It looked to me that all the worst teeth in the country came to me, then I thought, perhaps, it might be the locality that made teeth decay worse than anywhere else. Finally I moved my place of business to a locality sixty-five miles away and where the surroundings were altogether different in every particular from the one moved from, in the way of water, land, and the surroundings. Yet, I found I had to make my fillings larger than almost any others that came under my observation. Then, again, I moved from the State and came to Texas where I found the same conditions prevailing. In the meantime I had been almost entirely isolated, having lived in places where there were no other dentists. But soon after coming to Texas, nearly thirty years ago, I became associated with others in the profession and so had

a better means of investigating matters. I studied and pondered the matter for years trying to find why nearly all my cavities were so much larger than those of the average dentist I didn't want to believe there were so many people in the profession who were not doing their whole duty, nor did I till I was forced to do so. Then came the long and sometimes tedious discussions on the subject of extension for prevention." The subject has greatly interested me from the beginning and I have waited patiently for some one to advance something which I could think was driving in the right direction. So when I was requested to write an article for THE DENTAL SUMMARY I at once decided I would give a few ideas as to my views on the subject, and which could be done in a few words. Do I believe in extension for prevention? Yes. That is, I believe that nine hundred and ninety-nine cavities out of a thousand are not carried to the extent of the decay, hence should be extended till there is no suspicion of diseased tissue.

That is, extension far beyond what is done with the average cavity. Do I believe in extension for prevention in the ordinary meaning that is meant? Most emphatically, no! For when every bit of diseased substance is removed from a tooth, then and there is the place to stop.

And as to whether that tooth can be successfully filled or not depends entirely on who is at "the other end of the instrument." In a word, I believe that all the extension necessary is thoroughly cleansing the cavity of every vestige of decay, then fill that cavity as it should be, and no matter what shape the walls are, if the filling is put in and shaped right, that tooth will be preserved.

TRIFLES.

BY CHAS. H. BARTLETT, PARKERSBURG, W. VA.

Member of the West Virginia State Board of Dental Examiners.

Life is made up of trifles; a trifling, careless word spoken in jest may lose a valuable patient. I once heard of a dentist who carelessly remarked to a lady patient, who had passed her twenty-ninth year in single blessedness, that he could tell a person's age by their teeth. She never returned for his advice or services. He lost a valuble patient. Cleanliness is next to Godliness,

Never examine the teeth or attempt to work for a patient without first washing your hands, and that in the presence of your patient, if possible. Your general appearance of being well groomed, clean shirt, and shoes well blacked, indicate the good breeding of a gentleman. Although your clothes may be threadbare, there is no excuse for not being clean. Never wear a diamond stud on a dirty shirt front. The necktie is the center of dress. I once knew an excellent dentist, one who understood his business well, and did excellent work, who used to go without a necktie of any kind and kept his finger nails trimmed down to the quick. It gave his neck and hands a very untidy appearance. He was of a very economical turn. A patient of his neighbor's (a brother dentist) called for some trifling examination when her dentist was out of the city. Upon his return she visited her regular dentist to have her teeth looked over, and he, after using the floss, clipped off the piece used and threw it into a small waste-basket. He was shocked and surprised by his patient remarking that his friend and neighbor had used the floss in making his examination and when done, wound it back on the spool again. She said she wondered how many times he had used the same floss on other patients.

One cannot be too careful in keeping his instruments well sterilized and his cabinet and bracket scrupulously clean, always using clean napkins. Your patients are always quick and careful to notice all these important trifles. First impressions often are more lasting. Nothing makes a more pleasant impression than a neat, clean, well-kept office. A cheerful, prepossessing appearance, and a well appointed office, are wonderful helps to a young man in building up a practice. These may seem like trifles, but when thrown into the balance they weigh mighty heavy.

I once knew a young dentist who was seeking a location, and he had made up his mind to locate in a certain city and was on his way there. Stopping in a small town of about two thousand, to make connection with his train, he had two or three hours at his disposal, and took a stroll about the village and concluded to stop for the summer and complete his journey in the fall. Had the day been dark, rainy, and disagreeable he would have remained in the station and gone directly to his place of destination. He has spent over forty years in the little village, now grown to quite an important city of twenty-five or thirty thousand inhabitants. Just a bright, pleasant day decided his destiny for life.

A trifling speck of decay left in a cavity may ruin the most perfect filling and perhaps the tooth. If difficult to clean and this little, trifling speck, seems so far inside the cavity from what seems to be a good and perfect margin, some young men might say, "well, that will do no harm, let it go." It is only a trifle to begin with, but a matter of considerable importance in the end.

In a practice of fifty years I have learned many things, and am still learning the importance of trifles.

For the past eight years I have been on the State Board of Dental Examiners, and have had occasion to meet many young men just entering the profession, and am pleased to say many of them are gentlemen of the "first water" and will be a credit to the profession of their choice. I can now recall only two who answered, that before examining teeth for a patient, they would first wash their hands.

The prerequisite of a good and successful dentist is to be a gentleman. I do not mean by this, one who can wear a silk hat, kid gloves and patent leather shoes, but a gentleman at heart in the true sense of the word, one who has sympathy for his suffering patients, and a kind forbearance with their complainings. A word of sympathy expressed, though it may be only a simple word and seem but a trifling matter to you, goes far toward relieving the grave apprehensions of a delicate patient.

Trifles in the laboratory as well as in the operating-room are matters of importance. A small, trifling piece of solder may strengthen a bridge and save much trouble. It is much easier to file off a trifle too much than to add it after you have your case nearly finished, and wish you had made it just a trifle stronger.

Great care should be observed in getting perfect occlusion, a trifle too long or a trifle too short may cause much trouble in masticating. I might continue this paper to almost indefinite length, as there are many more trifles that could be mentioned, but my space is limited and no doubt you are already crying: "Hold, enough!"

These few trifling remarks are more for the young men just starting than for the older ones who have long ago learned the importance of trifles.

REGULAR CONTRIBUTIONS

HIGHER FEES AND HOW TO COMMAND THEM.*

BY W. G. EBERSOLL, M. D., D. D. S., CLEVELAND, OHIO

For years we have heard a cry from the dental profession against the low fees commanded for services rendered.

That fees are not what they should be, in the majority of cases, all will admit.

Ask why this condition exists and you are told that people will not pay higher fees.

Some years ago, and even before the writer thought of entering the profession, he heard these complaints and marveled at them. Filling a position which brought him in close contact with both the dentist and his patients, he began an investigation of the cause or causes of these conditions.

He heard a cry of distress. He listened and he heard the lamentations of the suffering public against the torture inflicted and the anguish endured while the poorly-paid dental profession labored to prepare in extremely sensitive teeth, cavities that would comply in every respect with the theory of extension for prevention as laid down by Doctor Black and his followers.

He looked and he saw the patients with features distorted by fear and suffering, with beads of cold perspiration rolling from every pore of the body, every muscle rigid and every nerve strung at the highest tension, endeavoring to stand the torture of the very damned, that they might save their teeth and preserve their beauty, believing, because they had been so told, that there was no other way, while the profession was coaxing and pleading with them and losing temper, scolding and even forcing them to submit to this treatment because the fee at the end would not justify a greater loss of time.

*Read before the Ohio State Dental Society, December, 1903.

While gazing upon this uninviting picture, the thought came, "Why need this be so?" and after a few days' thought and consideration the answer came, "It need not be so." The belief came that dental operations could be successfully and well performed without so much pain and that people would pay and pay well to obtain them.

So deep was the impression made by this thought that it was communicated to the dentists met, and they were many, and while some smiled and said nothing, others laughed and said "impossible."

So firm was the belief in the correctness of this theory that to be laughed at simply meant to create a determination to prove it.

The study of law was abandoned; that of dentistry and medicine begun and finished.

At the end of a year in practice a paper entitled, "Are We, as Dentists, Doing Our Full Duty to Humanity," was presented before the local city society. Here, again, was expressed the belief in the possibility of painless dentistry and higher fees. Again the dentists laughed and said "impossible," and some of the more friendly counseled giving up the visionary and settling down to practical things and earning a living.

This experience showed that to command attention, let alone the respect and confidence of the profession, it would be necessary to prove beyond a doubt the correctness of the theories advanced.

Believing the position taken was in the right and that right must win, if persisted in, persistence continued.

After four years more in practice a paper entitled, "Combating Pain in Dental Operations," was read before the Northern Ohio Dental Association. The same views were expressed, not as theories this time, but as plain hard facts which would admit of no doubt.

There were some who laughed this time, but it came only from those who were not familiar with the circumstances which led to the writing of that paper.

Cleveland was ready to listen and consider; northern Ohio had its eyes and ears open.

Gentlemen, for eleven years I have believed, and believe today, that painless dentistry is possible, and that when it is given to the public there will be no excuse for complaint against just fees; and I have talked, worked and written with this end in view.

Three times I have written papers bearing upon this great question.

The first set forth the belief in the possibility of a reformation in the practice of dentistry which would enable one to perform first-class dental operations practically without pain.

I was told it was impossible; it could not be done.

The second paper was devoted to proving that it was possible, and with the methods now at hand at least ninety-five per cent. of the pain could be eliminated from dental operations.

This time it was said by some of the discussers of the paper that while the methods advocated might make it possible to perform dental operations practically free from pain, they were impractical; requiring so much time that people would not pay fees sufficiently large to justify their general adoption.

The third paper we have before us to-day and is presented with a view to proving that people not only appreciate the efforts put forth in their behalf, but that they are willing to pay and pay well for the extra time spent in this manner.

Just so long as we continue to use the old methods, just so long will the great majority of people keep as far from us as possible and just so long will the few who do come to us grumble when called upon to pay good fees.

On the other hand, if you give your patient's first-class dental operations, performed under thoroughly sanitary conditions, and using the most humanitarian methods, you will be astonished at the change that takes place in the patients themselves as well as in the fee they are willing to pay for such treatment.

If we want high fees we must obtain them by giving our patients that which they want and for which they are willing to pay.

There are many things which must be taken into consideration in attempting to meet the desires of the public before we are entitled to higher fees.

Dentistry, free from pain and suffering, is the greatest; but it alone is not sufficient.

It was the writer's privilege, in years gone by, to visit a great many dental offices and to study the means which lead to the success or failure of various dentists.

A close study was made of the dentist and his surroundings, his dress, his appearance in general, his office, his instruments, his patients and his work.

The knowledge thus obtained has been of equal, if not greater, value to me than my medical and dental college courses. They were essential; but the former knowledge was the key to their proper use.

What little success I have met with in the profession has been due in a great measure to close observance of the motto adopted early in practice. It is, "Live for Humanity; but Let Humanity Pay for the Life."

In the execution of this motto, three cardinal principles have been closely followed:

1. Try to practice humanitarian and thoroughly sanitary dentistry.

2. Try to make each operation or piece of work just a little better than the last.

3. Try to receive just and full compensation for the service rendered.

The first two are involved in the first clause of the motto "Live for Humanity," while the third is embraced in the second clause, "Let Humanity Pay for the Life."

By humanitarian dentistry is meant dentistry wherein every method at our command is used to not only prevent pain and suffering, but to prevent the fear of them.

This is the most important part of the work. It is the principle which causes the saving of more teeth than is possible by any other means.

Think first of the comfort of the patient; the thoroughness of the work second; and the size of the fee last; but base your charge upon the first two, however.

It is far better to have a less perfect piece of work, if it were necessary, in one particular tooth and save all of the teeth of the patient, than to make a perfect operation in one tooth, inflicting so much pain in so doing that the patient not only neglects all other teeth, but tells all of his or her friends how terribly Doctor Do-it-perfect tortures his patients.

It is not necessary, however, for the operator to sacrifice the thoroughness of the work in the least if he will but adopt the methods which are at his command.

How to accomplish this kind of work I cannot, in this paper, tell you. Time will not permit of so doing. I can simply refer

you to articles written upon this subject by men who are working along these lines. My own methods are set forth in a paper published in the September number of THE DENTAL SUMMARY, of 1902, entitled "Combating Pain in Dental Operations."

By sanitary dentistry is meant the execution of such methods as will not only give us sterilized instruments and materials used about the patients, but a clean, tidy and inviting looking office with an operator clean and neat in dress, clean in body and clean and pure in mind.

It matters but little how careless the patients may be in the care of themselves, they appreciate to a greater or less degree cleanliness and purity in those who work for them.

Many men, who would have succeeded otherwise, fail here.

People dread the dental office at best, but when invited, or, as the case may be, when driven to the dental office, think you they will pay a good fee if they find, as is very frequently the case, an untidy office, with instruments, soiled linen, old papers and magazines scattered and littered about with an accumulation of dirt and dust of days standing upon them, the dentist with last week's mud still upon his shoes, trousers that are frayed at the bottom and bagging at the knees for the want of a few minutes spent with needle and thread or with a hot smoothing-iron, and vest and operating coat covered with dirt, dust, plaster, wax, and, worst of all, blotches of blood as the result of yesterday or the day before's or last week's extraction, wearing linen that should have been cast off days before, and with a mouth fouled by tobacco and worse still by cigarettes and liquor?

Place such an one in such an office and then tell me if you think patients who are compelled to submit to treatment surrounded by such conditions will pay good fees without a protest and tell me whether such surroundings will obtain and hold a class of patients who can and will pay good fees.

Perhaps some may think this picture overdrawn. To such I will say such cases do exist, and many of them. To the doubting brother let me say, come with me and visit the dental offices in any of our cities, or go for a few days into the country and visit the offices of the country dentists. If the experience is new, you will be dumbfounded at the frequency with which the picture described meets your vision.

But let us leave such an office and seek our own and there let

us look for possible improvement in this line. There are none of us perfect. There is always room for improvement. As an illustration of this statement, I will ask how many users of nitrous oxide gas have two hoods or face-pieces and sterilize one while using the other? Did you ever stop to think how foul these hoods must become with the offensive breath of the patients passing through them? And yet, I had never seen or heard of any one taking means to thoroughly sterilize them until I mentioned the matter about two years ago.

How many place sponges saturated with formaldehyde throughout the office on Saturday night and close it tight until Monday, that the fumes may act upon the organisms that have accumulated?

There are many things of this nature that would permit of improvement before we can claim to have reached the ideal from a sanitary standpoint.

In following the principle of trying to make each operation just a little better than the last, I will simply say that a man places himself in a position where he must advance.

To advance in workmanship and skill means to give better service, and to give better service entitles one to command higher fees, all else being equal.

Thus far we have discussed the side of the question which would entitle us to a higher fee; now let us discuss the fee question itself.

"Let Humanity Pay for the Life." In giving a life to a cause or profession, it is but just that those receiving the benefit from the life should pay for it at its par value.

From the professional standpoint the financial part has been, is and should be, a secondary consideration; but, gentlemen, it is by no means the least in importance.

Love of humanity and love of the profession is all good and well; but to do this and forget the dollar means to forget that which is essential to complete success.

Knowledge and skill are stores of wealth if properly applied; but both the profession and the laity judge your knowledge and your work much by the number of dollars you are able to command for them.

If you have certain theories to advance, certain methods to advocate, first prove that they will bring in the dollars and the world will listen and respect you and your teachings.

There is something radically wrong with the man who claims that he is simply working for the good or for the love of the profession and thinks but little of the financial side of the question.

A man of that kind, though he be honest in his convictions, and though he be a good operator, yet he does both himself and the profession a great injustice when he forgets to make a reasonable charge for his services.

Do not sacrifice the work to get the dollar; and if busy do not sacrifice the dollar to get the work.

In starting in the practice of dentistry, or if in the practice for some time, and you have idle hours on your hands, work for all who come for service, regadless of thei ability to pay a fee.

First get the work regardless of the fee. Perform each operation just as carefully and thoroughly and just as free from pain as if you were to receive an enormous fee at the end, and you will have done three things.

1. You will have gained experience, dexterity and thoroughness in painless methods.

2. You will have sent out the very best kind of advertisement a man can procure.

3. You will have done a great kindness to a fellow being.

If the patients be poor, they have some friends who have money and they will tell them. When these friends come to you, please them. They have friends who have more money and can pay you well for your services. They, too, may have friends who are wealthy. Thus, if you start with the very poorest people you may gradually ascend the scale until you have the very wealthiest and best paying people in the land and they will come if you follow the methods advocated in this paper.

In raising prices, do not be afraid to do it. First, "get busy," and when you have your appointment book filled for a month or six weeks ahead, begin to raise prices, not fast enough to drive your patients away, but fast enough to gain the name of being a high-priced man.

If you do good work and do it with little or no pain, do not be afraid of being called a high-priced dentist. It will keep some people away, but it will bring others and of a kind you want.

Gentlemen, this paper is before you. The thoughts expressed,

the methods advocated, and the principles laid down are not the product of idle fancy or a vivid imagination; but are the product of actual experience, every one of which has been thoroughly tested by the writer and others and are given as facts.

I would that I might tell you just what they have done for me without spoiling the influence of the paper by increasing the feeling which I fear may come to the minds of some that it was written with a feeling of big I and little you; but to do so would increase this false impression and gain nothing in the end.

The paper has been written in the interest of humanity and in the interest of the profession and has been so written because I could present the facts and make them emphatic in no other way than by reference to personal experience.

Personal experience, together with the proof given by others who have taken up this class of work, and are meeting the most encouraging results, certainly justify the statements herein made.

Painless dentistry must come, and with it higher fees. If not taken up by the men of to-day it will be by the men of to-morrow; and when it comes, with it will come a reformation in the condition of the teeth and mouths of people of the land that will make a healthier, happier and better world.

DISCUSSION.

Dr. Henry Barnes.—The essayist has succeeded in bringing to the fore the fee question so that there is quite a metallic ring to it, notwithstanding he lauds the humanitarian idea which, ostensibly intended for the patient, seems to center in the operator. Of course the dentist should receive a liberal compensation for his work, but the discussion of this subject has heretofore, by common consent, been relegated to the background in favor of other and more important professional questions.

Painless operations are quite possible through the agency of cataphoresis in a certain class of teeth, notably in those of the young, but what we desire is a painless method for those severe and distressing cases in dense dentin and where we have a deposit of secondary dentin. In these latter cases cataphoresis is no better than any other known method. Painless operation is largely a question of cavity preparation, both as to the form of cavity and method of operating, and he will be the most successful in this direction who is most considerate of his patient. No single method will suffice for all cases. Cataphoresis, suggestion, or any other known method may be used as the particular case seems to demand.

Dr. J. R. Callahan.—I don't know that I have anything to say on this subject, although I am much interested in it. I think that the personality of the operator—the personage, I might say—has everything to do with his fees and his success. If a man has the reputation of being a cheap man he cannot expect to get good fees. He must have a reputation of charging well when he can get it. This may be illustrated by a little incident that occurred a short time ago when a suit was brought in a court of Cincinnati where a dentist had charged $400, which the man refused to pay; and a lawyer came to me and asked me to look at the work, and I said I had no time; but he insisted that I glance over it and see if he had a right to charge what he did. I said you had better not take me down, because he advertises to do work cheaper, and that is his reputation. He advertises to do work for $5.00 and then charges $10 and $15, which he has no right to do. Let him do what he has agreed to do. I say, if you want a good fee, do the work right, and make your reputation such that people will know you will deliver the goods.

Dr. C. R. Butler.—From the principle pervading the paper this notion that has appeared among the non-attendants upon the State Society and other societies, would confirm their notions, and save declarations many times—and it is not only among dentists, but among the laity, that the principal thing of these gatherings is to make fee bills, or prices, how much this or that one shall charge for their services. Doctor Callahan was right—you want to be sure you deliver the goods; but that is not what we come here for—this making of fees. We come here to study the science, or art, if there is any such thing connected with dentistry; that is what we come here for; and if we are well equipped we may be able to deliver the goods in such a manner that the people will accept them. I think this is the first time that so much has been said in regard to what our fees will be since the Ohio Dental Society was organized.

Dr. L. T. Canfield, Toledo.—I am glad to congratulate Doctor Ebersole on the stand he has taken for humanitarian dentistry; it is certainly Christian-like, and I thoroughly indorse that part of it. But I am not so sure that it is the making of higher fees.

Foresight is better than hind-sight in the development of any undertaking. You cannot be a progressive individual, unless you look forward instead of backward. The ignorant and the skeptical are the ones who look backward. The progressive individual cares nothing about the failures of the moss-back methods of the past. New environments and new conditions demand new methods with advanced ideas in keeping with the times.

Perhaps we cannot all fully accomplish the Doctor's humanitarianism, and Christian spirit. But let us follow his principle; we cannot all be perfect. If men had been rated in the past according to the "Golden Rule" standard; according to their power, and real utility, how many poor kings, bad generals and weak statesmen would have been good, happy and useful plow boys?

The Doctor's sanitary dentistry I can fully indorse; it has always been somewhat of a hobby with me. It has been said of me (by some of our

dentists) that I was a crank because of my many devices and fixings for sterilizing, etc.

Not long ago I was giving a clinic at my office for our local society, and my assistant overheard one gentleman say (who was not used to frequenting my office), "Canfield has gotten all fixed and cleaned up for the occasion," but others who were used to coming in, said, "not much, you may come here at any and all times and find it just as it is to-day, even the laboratory always looks as though he did not do anything in it."

I am not puffed up over this, gentlemen, it is only a hobby with me; I cannot help it.

One thing I wish to speak of in particular, is the sterilizing of your instruments.

I have a sterilizer within reach of my chair and my instruments are always immersed in it before using, especially the mouth-mirror.

I have had many patients speak of it and compliment the method. It pays, but I do not know as I ever received larger fees because of it.

Now as to higher fees, my views are not entirely in accord with the Doctor. I am certainly anxious and willing that the dentist shall be better paid for his work, and am well aware that the average dentist is not well paid for his labors. But I do not believe that the dentist of experience, tortures and punishes his patients, drilling sensitive cavities, because at the end, he cannot command a higher fee for the time spent. I do blame the dentist, but not in his light. It is his poor business abilty; his close confinement apart from the business world unfits him for a sharp business man. He lacks business tact. The trouble is not with the public. It is a well-known fact that many of our most highly-educated and wealthy people rush to the bargain dentist just because it is cheap. Will these same people come to you if you tell them you will spend two hours on a one hour operation, trying not to hurt them, if they will pay you double the price? I hardly think so.

Why is it that the bargain dentist advertises plates for three dollars, gold crowns for two dollars, etc? Gets the people coming, has plenty of business, but never makes a plate for less than fifteen or twenty-five dollars, or a crown for less than eight or ten dollars? *Is it because he does not inflict any pain in his operations that he gets these higher fees?* No! It is because of his commercial and business ability.

He knows that the average man swallows his dose of medicine, knowing nothing of its composition, but believing it will stop the pain. He knows that women with picture hats and silk dresses, will brave bad weather, jostle and scratch each others faces, attending a forty-eight cent bargain sale, to buy something that can be bought any regular day at twenty-three cents.

He knows that the physician writes, "Sod. Chlo." and H_2O. on his prescriptions, because he does not want his patients to know it is only salt and water. The doctor, banker and merchant are all honest, from a profit-taking standpoint, but all join in believing that what the public does not know will not hurt them.

Do not understand me to advocate the methods that some of these men

practice. It is only to show the peculiarities of the public and the business methods of men.

I believe the dentists should "get busy." It is the gospel of the day. If you want results, "get busy." Any object that is hard to attain you can have, if you will "get busy" and "keep busy." Don't sit like a big frog on a stump in a mill pond, croacking all the time. Get in the "swim." Be helpful and enterprising. Larger fees and lots of the good of the world will be yours, for you will earn and get it.

I think if Doctor Ebersole has self-hypnotized himself into the belief that fearing, nervous children and nerve exhausted people, can be operated upon and hypersensitive teeth drilled, without pain, he may be capable of hypnotizing his patients into the same belief. Success be with him.

Dr. J. Y. Crawford, Nashville, Tenn.—One of the responsibilities resting upon the profession is looking to the lessening of pain, and at the same time doing the work efficiently, and getting more for it. Now, everything that is done in that direction is not only a benefit to the dentist, but a benefit to the whole people.

This so-called cheap dentistry is the most expensive dentistry in the world. I am one of those who believe that it is within the province of dental surgery to save the masticating organs of the teeth to the patient, and the surgeon must do his duty conjointly. With that ideal in mind you select two patients as near alike as possible, and put one patient in the hands of the best dentist in the State, and at the same time is a man who has the reputation of charging the biggest fees, and this patient is fifteen years of age; and then you take another patient with like characteristics and put him in the hands of a so-called cheap John—the man who makes his reputation for cheapness—the man who has patronized the latter will find him to be the most expensive, and the next time he goes to the highest-priced man in Ohio.

Dr. J. R. Bell, Cleveland.—I cannot entertain you as our worthy friend who has preceded me just now, but if I have a reputation for doing any one thing, that thing is charging large fees. We believe in charging the highest we can get; I don't know whether it has reached as far south as Columbus, or not.

I do feel that the best we can do is poor enough, and to charge the very best for the best we can do is bad enough. We are using up our energies, using up our vitality. We are not any of us going to over-reach, and the public is not suffering from our exorbitant fees, and no one as I know of has been bankrupted by dentists. We should do the best we can to alleviate pain. Many of us do not, I acknowledge, take the pains and take the time to anesthetize and operate to get the fee that perhaps we might do. I myself, perhaps, incorporate with my work more business than I should do, but I am something of a hustler; when I commence work I like to go ahead and finish, and perhaps I do cause a little more pain than I should. I think when I go home I will profit by some things that have been said and see how much I can do toward alleviating pain by anesthetizing the teeth upon which I operate.

I like fees; I like to have the people know that it is the fees we are looking after to some extent; for without the fees we cannot exist.

We must have instruments and appliances of the very best. We must strengthen ourselves and keep ourselves in trim, as has been described.

If the profession at large can incorporate the principles that have been laid down here to-day in condemning the unsightly, and strive more toward the useful and esthetic work, the fees would come just as readily as those efforts are put forth. People are willing to pay fees for good work. The best is always the cheapest. The man who comes to you and has good work done, pays the fee and goes away with the feeling that he has paid for skill and advice and instruction, and will put forth an effort to care for these organs himself. The responsibility after you are through must be with the patient. Make that emphatic. Do not let the patient feel that you yourself are responsible for that work after you are through. Let him know that the best that you can do has been done for him. When you have schooled your patient in feeling that responsibility he will appreciate what you are doin~ for him.

Dr. W. T. Jackman, Cleveland.—Doctor Ebersole is a neighbor of mine. We happen to be located in the same building, and on the same floor. I have come to know him very well, have known him for a number of years, and those who heard his paper last evening may think he is an enthusiast on that subject, and well he may be, because he has a right to be. I know the Doctor has succeeded just as he stated in that paper. Now "the test of the pudding is in the eating," and the people appreciate us a good deal as we appreciate ourselves. We can get good fees if we will.

The members of the dental profession in the cities of Ohio, get less remuneration for their services than in any other profession I know of. It is especially so in the city of Cleveland, and if it is not true in the cities further away I don't know about it. I think it is our own fault if we do not get good fees for our work.

The two factors the Doctor spoke of are essential factors in my judgment—the first is cleanliness. I happen to be like Doctor Price, a Methodist, and belong to the same church, so I will give you a little experience. I think an ounce of experience is worth a pound of theory.

One of my patients related an experience she had in a neighboring city. She said she went into an office for some temporary work and never got in such a dirty place in her life. She was afraid some one would see her in there, and got out just as soon as she could. She appreciated a clean person, clean instruments, and clean office. I want to say to the young men, be exceedingly careful about your person and your office and particularly about your instruments. Now, you cannot, in my judgment, practice dentistry properly unless you sterilize your instruments, and it is to your advantage to let your patients know that you do it. It is the proper and right thing to do. Of course the patients want to know, and if you tell them they will believe you, but it is a good idea to let them see that you do it. The saliva tube I never put in the mouth unless I tell

the patient that it has been sterilized before it goes from one mouth to another, and that it relieves the patient's mind completely—it relieves them to know that after the instruments are used they are cleansed and boiled, and mouth-mirrors, after cleansing, are kept in an antiseptic salution. Our patients notice these things, but they are the little things that bring patients to you. They are mighty things that oftentimes bring about the good results. The side, perhaps, that the patient looks at most is the painless side of dentistry. Doctor Price and Doctor Ebersole have been called cranks on cataphoresis. We have had one machine on the market—I am not interested financially in that machine—but it is one worthy of our consideration. All of the others have gone out of fashion; you all know what machine that is, if you have had experience in cataphoresis. Use cataphoresis, use anything that is not injurious that will lessen the pain in operations on sensitive teeth.

Dr. W. G. Ebersole.—I am sorry that the discussion, the time spent on the discussion of this paper, has been so short. I know from talking with a number of men last evening that there are a number of men who would like to talk upon this question, and take opposite sides to some who have been talking. It has been almost a Cleveland talk so far.

I want to thank my brothers from Cleveland for the compliments they have paid me, and I want to say that I feel gratified at the interest manifested in the question. Those of you who heard the paper yesterday will remember I placed the question of fees as third in importance. The question of fees was simply taken up at this time to answer the complaint aganst the use of painless methods that has been advanced by my brothers in the profession. My first paper, as I said yesterday, took up the question of the possibility of producing painless dentstry; the second paper set forth the fact that it could be done, and that by certain methods at least ninety-five per cent of the pain ordinarily inflicted could be eliminated. Then the statement was made that people would not pay a sufficiently large fee for the extra time that would be consumed in making painless operations.

And, gentlemen, I say to you now that I believe as firmly as I believe I am drawing breath at this minute, that painless dentistry must come, and with it we will get larger fees. Give the people that which they demand, that which they are crying for, and that which makes you able to charge a larger fee.

I hear many men say, I can't get larger fees. I have heard it all over the country. Why can't you? Because you don't give that which entitles you to a large fee. Can you expect a patient to sit in your chair and suffer the torture of the very damned, and then get up and say to you, "Doctor, I have had a very pleasant operation; I have enjoyed it, and am very grateful to you; here is a good-sized fee?" Why are you afraid to charge higher fees? I will tell you. The charlatan, the human vampires across the street are all posing as "painless dentists"—doing "painless" work at low fees. The people are flocking to them, seeking painless operations. They are more careful and considerate but do not have the reputation of being good operators. You may have. If you are able to perform these

operations with but little pain, the public will gladly pay you double and tribble what they pay the man across the street if you will but give them operations that are painless, that is, first-class operating with but little pain. And if you are unable to do so, and in performing your operations you inflict so much pain and suffering that they are unable to put up with it, they are going to continue to go across the street and pay the charlatan who is simply covering up the decay in the cavities, and keep going to him, and pay him their money, or they will neglect their teeth.

One gentleman spoke of a man in Cleveland who took up electric operations on sensitive cavities, and I want to say that the experience I have had, or rather the experience that others have had at the hands of that man made Cleveland one of the hardest places on the face of God's green earth to talk painless dentistry. That man and the methods he employed had been so thoroughly discussed, that the very suggestion of painless dentistry placed a man in an unfavorable light. But I want to say to you that that man while a humbug of the first water had as his following the wealthiest people in Cleveland and Northern Ohio, and simply because he took care of their teeth without hurting them. He is losing them because, as one said, his work is inferior. Then speak about high fees. He charged higher fees than any man in Northern Ohio. He made a statement to me that he never put a cement filling in a tooth for less than $5.00. As an illustration of that, a poor servant girl had been placed in his hands by her wealthy employers, and he placed in her teeth six cement fillings, charging her $35 for the six cement fillings. Finishing that work, he sends her to me for the extraction of three teeth, and in a note he says, "Doctor, be as considerate as possible, she is a poor girl." Those are facts. Now, when they had the money, I know of his charging for three amalgam and seven cement fillings, $200. I had an opportunity of removing the cement and the amalgam fillings, and under each one there was a putrescent pulp.

Gentlemen, there is a moral there. But I might talk for hours, there is so much to be said. I want just a moment more.

In my paper yesterday I simply stated that which I believe I have nothing to retract. There is much I would have said if I had been permitted to do so that pertains to the paper; I would have made it much stronger. It is hard to talk to older men who have been accustomed to going along the old line, operating quickly and rapidly—it is hard to get them to take time to use cataphoresis. Cataphoresis is only one of the many things to be used now. Another man spoke of hypnotism; be it hypnotism or anything you may choose to call it, in the name of God, in the name of humanity, practice it.

A REPORT OF EXPERIMENTS WITH ANTISEPTIC MOUTH-WASHES.

BY C. R. JACKSON, D. D. S., INDIANAPOLIS, IND.

It is not my intention to give you a lengthy dissertation on the subject of oral prophylaxis. I will simply present to you by means of charts, figures showing results of many tests made with various antiseptic solutions in the mouth.

These experiments were made by Dr. Geo. E. Hunt and myself and cover a period of several months. They number about three hundred, and we think the number made with each justifies us in believing the results give approximately the relative germicidal effectiveness of the solution given.

It seems to me the profession does not give enough attention to the prevention of caries.

We consider at length the various methods of repairing the ravages of decay, but comparatively how seldom do we hear discussed measures for its prevention.

There are certain periods in the life of nearly all of us when we enjoy almost complete immunity from decay. What are the conditions of the teeth and saliva at this time, and can they not be artificially produced at other times?

Those interested in this subject should not fail to read Doctor Hunt's paper read before the New York State Dental Society last month.

Doctor Hunt treats the subject under four headings.

First.—Food selection.

Second.—Frequent and thorough scaling and polishing of the teeth by the dentist.

Third.—The isolation and thorough bathing of each tooth with a solution of silver nitrate.

Fourth.—The frequent sterilization of the mouth by means of an efficient mouth-wash.

The first division—food selection—seems to me of little practical value, for even if we could control fermentation in the mouth by the use of proper foods, it would be impossible to control our patients.

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*Read before the Indiana State Dental Society, June, 1904.

It is difficult to diet a sick man, not to mention a well one.

But if a dentist had a clientele on whom he could practice the other three treatments, comparative immunity could no doubt be attained.

If it is possible to control decay, it will require the co-operation of both patient and dentist, and the sum total of work would be no less, but would be preventive instead of reparative.

It may sound fanciful, but I believe the chief role of the dentist of the future will be efforts to preserve the natural teeth *intact,* rather than continual repair.

After numerous experiments, made at different times, we finally decided on the following technic to govern all our tests:

The teeth were thoroughly cleansed with brush and floss after eating the mid-day meal. Three hours later the mouth was thoroughly rinsed with 15 C. C. of the antiseptic solution, holding it in the mouth for one minute (which is much longer than a person will usually hold a mouth-wash) and bringing it into contact with all parts of the mouth.

After waiting five minutes for the teeth to again become bathed in saliva, the mouth was washed with 15 C. C. of sterilized distilled water, holding it for one minute and then emptying it into a graduate.

This water is now impregnated with whatever micro-organisms are left in the mouth, and to determine their number a culture was made containing a small amount of the wash.

In most of our experiments we used gelatin as the medium in which to cultivate the bacteria.

The results of these tests made five minutes after using the solution are shown in column marked "Total A."

One hour later, another culture was made in a similar manner, omitting, of course, the preliminary use of the antiseptic solution.

The results of these tests are shown in column marked "Total B."

Of course it was impossible to use the whole solution, so our results are only approximate. We used three drops of the water, which was one-ninetieth of the whole amount. Multiplying then the number of colonies found on the culture-dish by ninety, gives the total number and is represented by figures on chart.

Unfortunately, nearly all substances which possess antiseptic

action may be used only in very dilute solutions, either because they are injurious to the general health or locally to the mucous membrane or to the teeth themselves.

FORMALIN 1:200.

A 1:200 solution is as strong as can be comfortably held in the mouth. We are very much disappointed in our tests with this solution. The reputed value of formalin as a germicide having led us to hope for much better results in the mouth.

BENZOIC ACID 1:200.

The results with benzoic acid were better than with formalin and were more uniform.

To one unacquainted with the great number (millions) of micro-organism in the normal mouth, these figures will not give an impression of great efficiency.

THIERSCH'S SOLUTION.

A solution of boric acid 12 parts, salicylic acid 4 parts, to 1000 H2O gave no better results than the previous two, even on comparison showing less favorably than benzoic acid.

The great variation in results, after using the same wash, may be due to the condition of the mouth at different times or a fragment of buccal mucus or epithelial cell may be included in the culture drops.

SALICYLIC ACID 1:200.

The results of the tests made immediately after using salcylic acid were, comparatively speaking, uniformly good, while those taken one hour later were almost as uniformly bad, but on comparison shows greater efficiency than the other three.

There are inexplicable things in all research work and here is one—why salicylic acid 1:200 alone should be so much more effectve than Thiersch's solution which contains almost as much salicylic acid and in addition boric acid which should add to its value?

I wish you to notice specially that in most of the experiments shown so far the number of colonies, one hour after using the wash, are many times as numerous as in the culture taken an hour before. This would seem to indicate an immediate but not a lasting effect.

MERCURIC CHLORIDE.

We tried this in several strengths, 1 :3000, 1 :2500 and 1 :2000.

We immediately noticed decidedly improved results. The 1 :3000 solution was fairly efficient in the first test but not seeming strong enough to be of lasting benefit. 1 :2000 was no more effective than 1 :2500 solution.

The results after using $HgCl_2$, 1 :2500 were almost all uniformly good and I wish you to notice that in the majority of cases, test "B" gave fewer micro-organisms than test "A," indicating a more thorough sterilization or a continuous action.

There are three properties or mercuric chloride which may be considered objectionable to use in the mouth.

First.—It has that disagreeable metallic taste which is very persistent and difficult to disguise. After trying numerous formula, we found one which was pleasant and refreshing.

FORMULA.	Gms.
Mercuric chloride	0.4
Thymol	0.1
Menthol	0.33
Oil Eucalyptus	0.1
Glycerine	50
Alcohol	50
Aq. Gaultheria Q. S. ad	1000

M. Sig—Use as mouth-wash.

If the wintergreen is objectionable to the taste, the wash may be modified by substituting cassia water or rose water.

Second.—The second objection which may be urged is that it is a poison Fifteen C. C. of the solution contains only 1-11 gr. of $HgCl_2$, and as mercury is often exhibited in larger doses than this, should the whole amount be accidentally swallowed it would do no injury.

When used as a wash in this strength the amount absorbed is so little as to be harmless, in fact, it is generally acknowledged that $HgCl_2$ cannot be absorbed into the system when brought into contact with the mucous membrane.

The proteid substances secreted by the mucous membrane uniting instantly with the mercuric chlorids form the insoluble albuminate or other loose insoluble compounds of mercury.

Third.—The tendency of mercury to discolor substances especially metals with which it comes in contact.

We used the wash for several weeks and noticed no discoloration but might be easily removed. To determine the effects of the wash on gold and amalgam, I tried several experiments out of the mouth.

First.—A pure gold filling was placed in a bottle containing one oz. of wash. Examined at intervals for a week—no discoloration visible.

Second.—22-k. plate—same result.

Third—18-k. plate—same result.

Fourth.—Old amalgam filling (gar.) polished. Examined at intervals for a week. Plug was soon superficially discolored but not much darker than woud be normal in the mouth.

Fifth.—Piece of 22-k. plate and plug of amalgam. When they were separated there was no discoloration of gold, but when amalgam was in contact with gold, mercury was deposited upon the gold as well as the amalgam.

In the last two tests a grayish precipitate was formed in the solution covering the amalgam as a sheath, mostly no doubt oxide of tin with possibly some mercurous chloride. On moving the bottle it readily separated from the plug.

All of these tests were performed in duplicate to prove each other. In no case did the amalgam plug lose the slightest amount in weight nor was its hardness affected.

In conclusion—mercuric chlorid solution was much more effective than any other tried and we think may safely be used under the dentist's direction and should be especially useful in those cases where decay seems impossible of control.

DISCUSSION.

Dr. G. E. Hunt.—The question of immunity and of susceptibility is under investigation now, and the probabilities are we will know something about these subjects in the very near future. This is a short scientific investigation, but we do not know very much about it now. The tests were made with a desire to find a wash that would stop decay. There comes a per-

iod in the mouth of nearly every one when there is a susceptibility to decay, and we have done our best, and cannot succeed in stopping the tendency. We did not try these tests just once, but tested each twice, and we found the results just as Doctor Jackson has given them to you. We used these washes very often, and you cannot expect a patient to use a mouth-wash every hour, and they are doing well if only six or seven hours intervene between washes. When bacteria flourished as before, we considered that the wash was not good.

In some cases we found that an hour after using the wash there were fewer bacteria, and we therefore found immediately after using it that the number of bacteria were reduced far greater by the use of 1:2000 bichlorid of mercury than with any other drug we used. So the conclusion at which we arrived was this: That in spite of the poisonous effects of mercurial chloride in sufficiently large amounts, in case of extreme susceptibility, the dentist using every means at his command to bring the parts to comparative immunity, I think he is just as much justified in prescribing mercurial chloride as a mouth-wash as the surgeon is justified in prescribing carbolic acid, or any other kind of acid that he prescribes, as a drug and cannot be taken internally. I hardly think this is poisonous to be of a serious nature. It seems to be that it is absolutely unworthy of consideration from the standpoint of toxic effect.

We find with the number eleven wash that it has no germicidal effect. You might as well use spring-water.

After each meal, the mouth was washed and cleaned with a thread and a brush, possibly more thoroughly than a patient would clean it. Three hours afterward the mouth was rinsed with a definite quantity of a drug—the drug to be tested—and this antiseptic solution was held in the mouth for one minute. We then waited for five minutes, giving time for the saliva to again bathe the teeth, and this time the mouth was washed with sterilized distilled water, which was then emptied into a graduate. This makes two cultures that we made, and a comparison between the first and the second gave us an idea of the action of the wash used. The number of cultures found in the dish were multiplied by ninety, as we used three drops of the water, which was only one-ninetieth of the whole amount.

The experiments were very interesting, and I have been much pleased with this line of original investigation. I think it would pay any one to take up this line of work.

Question.—What would be the effect of this mouth-wash on the mouth?

Doctor Hunt.—I used it on my own mouth a number of times a day, and there was a slight discoloration of dentine in my mouth, but it was hardly noticeable. Doctor Jackson saw some discoloration of gold in the fillings in his mouth. But these slight objections are not sufficient to stand in the way of the mouth-wash.

Doctor Jackson.—I wish to say a few words in regard to the effect these washes had on the gold fillings in my teeth. After discontinuing the

use of the wash, I had the fillings polished, but they soon became discolored again, and I came to the conclusion that it was not the wash that had affected them. There is one point that I don't believe I made clear. We do not contend that the mercurial chloride is the only thing that has this effect, but it was one of the best that we used. When one goes into an experiment of this kind, the field broadens out to such an extent that you can only use a very limited number.

A REVIEW OF PULP REMOVAL AND ROOT CANAL FILLING.*

BY DR. R. A. ADAMS, CLINTON, IND.

From the tone of our dental journals of late, I infer that there are yet a few dentists who do not know how to use arsenic for devitalizing the pulps of teeth, and having failures with this they have adopted pressure anesthesia, which, proving successful in their hands, they at once herald to the profession its great advantages and claim to have entirely discarded the use of arsenic. Dentists advocating one special line of practice to the exclusion of all others would be termed hobbyists-men intensely enthusiastic, and as such advocate a doctrine unsafe to follow, while on the other hand the fact that they are hobbyists in a no less degree proves to us that they achieve results in advance of the general practice, from which we may derive benefit by closely examining their methods and practice and adopting so much of it as our individuality will permit us to utilize.

There is no question that under favorable conditions the pulps of teeth can be anesthetized with cocaine under pressure and removed painlessly. It does not follow, however, that all pulps can be successfully anesthetized, nor that all pulps that can be anesthetized should be so treated.

It is very hard to tell where to use this method and where not To make a general statement, it is indicated where the pulps can be removed entirely by mechanical means and contraindicated where this cannot be done. I would say that in proportion as the pulps of teeth are difficult to remove, pressure anesthesia is contraindicated. It follows then, that the centrals, laterals, cuspids, second bicuspids and frequently the first bi-

*Read before the Indiana State Dental Society, 1904.

cuspids and first molars are best suited for this method, while the second and third molars and occasionally the first bicuspids and first molars can be more successfully treated by devitalizing.

Those who have a fair knowledge of the topographical anatomy of pulp canals, and have examined the canals of teeth that had been previously filled, know that a great many teeth are filled—necessarily and unnecessarily—with a part of a pulp intact.

Now if remnants of the pulp are left, they had better be in a devitalized condition than to have them die after the canals have been filled. Living remnants cannot long retain their vitality and when this is lost it is only a question of time till putrefaction with the attending sequela will occur, while if devitalized and as much of the pulp removed as can be, then mummifying paste pumped down on the remnant and canal filled, there is less likelihood of future trouble.

Of course I am aware that some dentists object to using mummifying paste, claiming it is unscientific and that trouble will follow its use, but I am of the opinion that under such conditions as above set forth it is not only practical, but is scientific.

Some of the pressure anesthesia enthusiasts object to the use of arsenic for devitalizing, because of the pain and the great danger of local arsenical poisoning. The first of these objections will not hold, for if equal parts of arsenic and cocaine, to which is added sufficient creosote to make a paste, is applied in the proper manner, no pain will follow. As to local arsenical poisoning, the only way this could occur would be for the arsenic to pass through the apical foramen. This would occur only when the foramen was quite large and the arsenic allowed to remain in the tooth too long. If there is an exposure, forty-eight hours is quite long enough for the arsenic to remain in the tooth, and if taken out at the end of this time, poisoning is altogether unlikely; if, however, the conditions are such that poisoning should result, it would be in an exceedingly mild form and would readily yield to treatment. Then, too, the cases where we would have trouble with arsenic would be cases where we would more than likely have trouble with the pressure anesthesia method, so after all this could not be held as an objection.

In using pressure anesthesia, if the apical foramen is small and a free opening is made before attempting to remove the

broach, gently slipped to the very apex and the pulp heroically removed, there will be very little bleeding and such as will occur will soon cease of its own accord; then by washing out canals with alcohol and drying, we have approached nearer the ideal condition than could have been attained by any other method.

It frequently happens, however, that the apical foramen is so large the broach does not engage the pulp sufficient to effect a complete removal when the broach is withdrawn, but will leave a torn and bleeding remnant—an unpleasant situation which must be remedied before the canals can be safely filled. I have observed that in twenty-four hours after trichloracetic acid was applied to torn and bleeding gums the broken-down tissue would come off, leaving a smooth, healthy surface. With shreds of cotton on a broach moistened with this acid and applied to the pulp remnants will effectually destroy them and after forty-eight hours exfoliation will have taken place when they can be easily removed, leaving a very satisfactory condition at apex. Of course care must be exercised in using the acid that none of it be forced through the apex and cause pericementitis.

As to use of adrenalin: When adrenalin is applied to the soft tisue it causes the walls of the blood-vessels to contract, thus lessening the circulation in the part; so when used with cocain in pressure anesthesia it defeats, in a measure the object sought, physiologically at least, by contracting the blood-vessels, thus preventing and taking up of the cocaine. Theoretically then adrenalin should not be used in this connection and I have found no advantage of it in practice. It may be used, however, to stop the flow of blood after the pulp has been removed.

In reviewing root-canal fillings I will confine my remarks to cases where the pulp has been removed by pressure anesthesia. Take a tooth where there has been an accidental exposure or where the pulp has been removed from a healthy tooth or under any circumstances where the pulp is in a normal condition and its removal is complete and not followed by bleeding, the proper precaution having been taken to prevent septic matter entering the canal, it may be immediately filled with safety. If, however, there is much bleeding following the pulp removal, it is unsafe to fill immediately, because the fact that there is bleeding is an index that the equilibrium of the apical region has been destroyed and should be permitted to return to a normal condition before filling. Then, too, there is danger of remnants of

the pulp being left in the canal. Unless the apical foramen is quite small there will always be more or less shreds and remnants left which should be removed before filling and as this cannot be done mechanically the shreds must be so treated and time enough allowed to permit nature to sever them when they can be removed and canal more safely filled.

Another objection to immediate filling is the danger of forcing the material through the apical foramen, thus causing traumatic pericementitis. If, however, a mild antiseptic is sealed in the canal for a day or two, allowing the anesthetized area at apical region to return to its normal condition, the patient will give warning when the filling reaches the live tissue.

DISCUSSION.

Dr. R. B. White.—I haven't very much to say on this paper of Doctor Adams, but I take it from the paper that he is in favor of pressure anesthesia, but does not favor radicals along that line. By this I mean those who use that treatment to the exclusion of all others, and I agree with him on that. In the first part of the paper he said that possibly those who used arsenic used it because they had better success, and probably those who used pressure anesthesia used that because they had better success and did not have success with the arsenic or were afraid to use it. While I have had trouble all along the line, it does not seem to me that I have very much trouble devitalizing nerves with arsenic. I am very careful to use a small amount and I usually put a rubber band on, and put a very small amount of arsenic right where I want it. It is hardly worth mentioning here, but I have a very small rod made like a tube, very much like an amalgam tube. I make my paste of arsenic and cocaine and fill up this tube with arsenic, and use a small amount of arsenic that will stay right on the end, right where I want it. When the patient comes back in forty-eight hours, I can get out that nerve. I don't believe it is good to be radical in either line. I think it is best to use pressure anesthesia in some cases and arsenic in the other; possibly combining the two is better than either one to the exclusion of the other. Sometimes it is a time-saver to use pressure anesthesia, and sometimes it is a good time-saver to use arsenic. Maybe I have put in a large filling and I have taken up all the time that I have at the present and have discovered an exposed nerve, and of course haven't time to use the pressure anesthesia method, so I just put arsenic in until the patient comes back. But sometimes some one comes along who cannot return, so I use the pressure anesthesia method and fill the tooth at once.

The doctor mentioned that sometimes fibres were left when the pressure anesthesia method is used. We have had some trouble. He thinks

that if you will fill the cavity with pulp mummifier, these fibers will be done away with. I think after you twist your broach around there and turn, etc., the nerve fibers will be just as well devitalized as though you had used the arsenic and left it in there. The method of pulp digestion is surely a good one. I think it is the most conservative way that I have yet struck. But my motto is go to work with filling and do the best you can. When you think perhaps there are some fibers left, it is a good plan to use sulphuric acid, which has not been mentioned before. You can get nerves out in this way.

Doctor Mason, Ft. Wayne.—I believe that there is nothing so embarrassing to a dentist as an unsuccessful effort to properly fill a molar in which an attempt has been made to remove the nerve. To me it is the most annoying part of my work. Nothing discourages one more than the thought that after repeated efforts to thoroughly remove a nerve from a tortuous root canal, I must finally dismiss my patient without having done the work thoroughly, notwithstanding it was the best I could do. In my conscientious endeavors to meet the ideal in this respect, I am frequently reminded of the remarks of Doctor Price, of Cleveland, who, in a talk before our Tri-State meeting, remarked, as I recollect it, that examinations with the X-ray disclosed the fact that fully fifty per cent. of the pulpless teeth that he examined were improperly filled, and this, too, by some of the most careful and painstaking dentists of his acquaintance.

Nature is a wonderful aid to the dentist. She is a great restorer. If it were not for nature's effort to correct the shortcomings of dentists and to sooth and repair the wounded tissues of imperfect dental operations, the value of the profession would not be so highly esteemed as at the present time.

The doctor has reviewed two methods of removing nerves from teeth: first, by the use of arsenic, and second, that by the use of pressure anesthesia. In speaking of the dangers from the use of arsenic, he overlooked the one of most frequent occurrence that has come under my observation—that is, the poisoning of gum tissue about the margin of the cavity wherein the paste was inserted. This comes about only by carelessness on the part of the patient or the operator, but usually the latter. I have had trouble myself along this line, and can attribute it to nothing else than carelessness. The deadly escharotic effect of arsenic must not be lost sight of, but knowing this, it need not be abandoned for fear of use. Keeping in mind its destructive effects, with an intelligent use of the drug there is little to be feared. Where the acid is placed at a safe distance from the margin of the cavity and hermetically sealed therein, there is little danger of death of the gum tissue about the tooth. It should seldom be applied without the use of the rubber dam, and every portion and margin of the cavity clearly discernible.

Doctor Harlan, in an article published in the *Dental Review* of July, 1903, describes his method, which in the main is similar to that in use by most dentists, using arsenic up to the removal of the drug. After the arsenic and pulp nodule has been removed, the doctor washes it with per-

oxide of hydrogen, dries the pulp-chamber and slightly moistens it with hydrochloric acid, 1 to 300. The cavity is then packed with papain paste, composed of papain, gr. v; Price's pure glycerine, minims iv; 1-200 acid hydrochloric, minims v, which is left in from two to three weeks. When the tooth is opened, the remaining pulp will be found wholly digested into a jelly-like mass, which can be removed with pyrozone or peroxide of hydrogen, with little or no difficulty.

Dr. J. P. Buckley, Chicago, commenting on Doctor Harlan's method, says that he prefers to use sodium dioxide where Doctor Harlan advocates the use of hydrogen dioxide, because any incalculable compound formed by oxidation and saponification of the remains of the digested pulp, are thereby mechanically removed and discoloration is prevented.

In the same paper from which I have quoted his remarks on Doctor Harlan's methods of devitalization, I desire to read what he says concerning two methods of treating teeth by pressure anesthesia with a view to prevent discoloration. Care should be taken in the selection of agents and materials with which to control hemorrhage, sterilize, dry and fill the root canals of these teeth. Attention is called to the difference between two methods of treating teeth by pressure anesthesia. One published as the method of W. D. Clyde Davis, Lincoln, Nebraska, and the other as that of Dr. D. E. McConnell, Gastonia, N. C. Doctor Davis says: "Apply the dam, if possible, and dry the cavity. If the pulp is not exposed but covered with a layer of softened dentine, apply first a drop of adrenalin, then one drop of a forty per cent. solution of formaldehyde. If quite a distance from the pulp, use slight but continued pressure with a rubber plug for a few seconds. You can now excavate to complete, or near, exposure painlessly. You are now where all usually make an application of arsenic for devitalizing and are ready for the operation. Apply to the cavity one drop of adrenalin, taking some up in the operating plan. Lay in the cavity a few crystals of cocaine, or a small one-sixth grain soluble tablet. Apply one drop of a forty per cent. solution of formaldehyde. Cause pressure with a rubber plug, at first lightly but steadily, and not heavy enough to cause patient any pain, gradually increasing the pressure and kneading the rubber into the cavity for about forty to sixty seconds. Remove covering to pulp-chamber and pass broach slowly toward apex of root. If there is a tendency to much hemorrhage or patient feels the movement of the broach, repeat the operation, being sure not to omit the formaldehyde. At the close of this you can remove the pulp of any tooth without the patient feeling the operation, and in cases where the tooth is slightly sore to percussion, as in advanced stages of pulpititis, the soreness will have disappeared, as many times I find the peridental membrane has lost its tactile sense. In cases of large apical foramen, when you are bothered with hemorrhage, again supply the adrenalin only with pressure for about fifteen seconds, and not a bit or another drop of blood will be discharged. Those who will, may now proceed with root filling. I prefer to dress the root with a non-irritating root dressing (campho phenique) for twenty-four hours, and then fill. By this method the color of the tooth is never changed. It is painless and saves time."

Dr. D. E. McConnell, Gastornia, N. C., endeavoring to endorse the method used by Doctor Davis, says: "Occasionally there will be considerable hemorrhage. When this happens, first wash out the canal with peroxide of hydrogen, which removes the blood and also some of the irritating formaldehyde, then either with a cotton-wrapped broach, or by means of a rubber plug, force some adrenalin chloride to the apex. This will control the bleeding, when you can cleanse with peroxide again, dry and fill the canal."

Doctor Buckley, in commenting on these two methods, says: "Here is a method by two men, supposedly the same, one preserving the color of the tooth, in this respect, and the other invariably fails. Now, why this difference in results? Both use the same agents in the same manner, except the latter gentleman, in case of hemorrhage, first used hydrogen dioxide which he claims 'removes the blood.' He should have said which decomposes the blood within the tooth structure, forming an insoluble compound which, if not mechanically removed, is liable to produce subsequent discoloration."

Doctor White.—I use the pressure anesthesia method myself if I do the work while the patient is in the office, but if not, I use the other method. Some time ago I was using cocaine and it acted like an anesthetic in the first stages. This is the only case that I have had trouble with in that direction. I never use arsenic in connection with cocaine. I do not have any trouble with heart depression if I use cocaine. I use adrenalin, however, when there is an excess of beating, and it never fails to stop it. The point that I have never heard mentioned is to take a piece of cotton and put on the rubber dam, and insert the cotton into the cavity, and have the patient press it down until it hurts, and it will have taken good effect in two or three minutes. I find Doctor Tuller's instrument which he showed last year is a very handy instrument where it can be used at all. I was in a hurry to go to the country Sunday morning, to get a good, square meal, and I was called to the office by a man who had the toothache, and had had it all night and wanted the tooth extracted, but I hated to see him lose a tooth like this one, and I did not like to use cocaine for fear I would not get through in time. I got access to it with this instrument and soon had the tooth in fine shape.

Doctor Stuckey.—I hardly believe in using mummifying paste. I do not believe a man should use it, if he does not know the ingredients of it, any more than a physician should prescribe some kind of a patent medicine instead of a medicine for which he has written a prescription. I would like to have the essayist, in his closing remarks, tell us about the paste he uses—whether the paste is on the market, or whether he has some new formula which he can give to the profession. If some one has a formula for one of these pastes, then it is different.

I think the trouble that most dentists have with using arsenic is that they do not allow it to stay in the tooth long enough. In nearly every case where I use the arsenic I leave it in a week. Most people would hold up their hands in horror to think of leaving arsenic in a week. In a few

cases I have had soreness of the teeth, but I don't think I have had any more trouble from the use of arsenic than from the use of pressure anesthesia.

Dr. L. A. Salisbury.—I believe in the use of arsenic, and I think if it is put into the cavity properly and left long enough—I leave it about ten days—and during the past seven years I have had only one case of trouble that I know of, and that was on the teeth of a young lady, eighteen or twenty years old. We found that she had the tuberculosis shortly afterwards, and I think that was probably the result of that. I do not have any trouble with arsenic, to speak of, at all.

Doctor Blakeman.—When this pressure anesthesia works all right, it is beautiful, but when it doesn't—well, somebody else can express it. It also reminds me of catophoresis. One man said he had no trouble whatever, and that it was very easy to control the current; the only trouble I found was to control the patient. Now this pressure anesthesia is somewhat the same with me. Oftimes it works too nice, and I would like to do it over again, it is so easy, and another time it is torture, and the patient will not stand for it. You can't depend upon it in all cases. I personally have had very little or no trouble with arsenic, and as has been said before, I think the trouble is we do not leave it in long enough. I have in mind some cases in which I was unable to devitalize with arsenic, so I filled up the cavity and left the arsenic there for a number of months and in that way got the nerve out. I do not remember of having any serious trouble with arsenic.

Dr. George Hunt.—I think the paper was a very practical one, and was written on practical lines, but there were one or two points which I wish to emphasize. The first is in regard to mummifying paste. My opinion is that the only place to use mummifying paste is under conditions and circumstances when it is impossible to remove the pulp. In a case like this I would use the mummifying paste on the principle that it could do no harm, and I hoped it would do good. But under no other circumstances would I use it at all. I like to use acid to stop the bleeding when we have a hemorrhage. The outside will then sluff off, but I think it is advisable to wait twenty-four or forty-eight hours before attempting to fill it. In some cases it will require more time than this. This question of arsenic resolves itself into this: Arsenic has two actions upon tooth pulp. The first is seen when or after an overdose has been taken into the stomach and gets into the circulation, then you can produce pain without feeling it, on account of the numbing influence of the arsenic on the nerves. This is the first action of arsenic on the tooth pulp. Usually at the end of twenty-four hours that action is at its height. You can remove the pulp of the tooth at the end of twenty-four hours and it will bleed, but if you leave it in a week by that time it will be totally different, and you can remove it without blood. The pulp will then be devitalized.

Doctor Worth.—I have found in some cases this method worked nicely, and in other cases it wouldn't work at all. I find I have the same

trouble from hemorrhage that I do with arsenic. I think using arsenic is very satisfactory, but I think gas is more satisfactory in my hands than any other method of procedure. I apply the arsenic and remove the pulp in twenty-four hours. I never leave it in longer, because I am afraid of poisoning. This is what I learned at college, and I never knew any better until I happened to be with another practitioner. He said to me one day, "Why do you remove the arsenic in twenty-four hours?" I told him that I didn't know, but that I was taught to do that way. He told me that if I would apply the arsenic and seal the cavity up carefully and leave it for nine days that I would have no trouble at all. I asked him why he left it in for just nine days. He told me that in that length of time you could remove the nerve, for there was nothing in the world to bother. If this is true, why is this not better than twenty-four hours? This happened something like nine years ago, and I have followed his instruction ever since, and I have had, so far as I am capable of judging, excellent success. The reason we leave it in for this length of time is for nature to do the work herself. With pressure anesthesia you would pull the pulp all to pieces. I haven't had any success with pressure anesthesia, but possibly it is because I have had such good success with the other method.

Doctor White.—It seems to me that it is wise to have a fixed time to leave the arsenic in, for you treat different classes of nerves, all the way from a healthy nerve to one that keeps your patient awake at night. Nerves need to be devitalized. I do not think there should be any definite time for leaving this in.

Doctor Throope.—I have run up against pressure anesthesia myself. I think that in the majority of cases it is about as sensible to use pressure anesthesia as it is to try to cut off a man't foot by the use of cocaine. I have been up against it myself. I once had a tooth that was bothering me, and I didn't want to use arsenic, because I was afraid it would hurt me, so I decided to have pressure anesthesia used. I got the rubber dam on, and then I couldn't object, and if ever a man was punished I was with that pressure anesthesia. The doctor told me it wouldn't hurt in a minute, but it wouldn't hurt if I should cut my head off in a minute. He made a very nice operation. Finally he got into the root, so he said, and I began to waken up, and he put on some more pressure, and I did some more objecting. I think I had a right to—for I was personally interested. Finally he got that tooth fixed, so he said. I want to say to you that that tooth is sensitive yet. Now this is my personal experience with pressure anesthesia, and I know what it is, so far as I am concerned, and I don't see how any man can get along in the practice and use it and make the patients believe he is doing a painless operation. I never could do it. I use arsenic and I use it right along. I have used it for fifteen or sixteen years, and it is a mighty good friend of mine. I don't believe any one could be more successful than I have been. I am ready to take up with any proposition that looks more feasible, and am always glad to use anything that is seemingly ahead of what I am using, and I have always failed with pressure anesthesia—not always, but practically so.

Doctor Strange.—This subject seems to be one that strikes us at the vital point. In regard to pressure anesthesia, I cannot say whether we gain anything or not by pressure anesthesia. I know when we used cataphoresis we thought that was the only thing. Now it is a thing of the past. I know I used this in my first case and it worked fine. I thought there was nothing else could be as good as this, and in a short time I took out this nerve and filled the tooth. I thought that I had come to perfection in treating pulp with this method, but it was too much like pressure anesthesia. Pressure anesthesia will work sometimes in some cases. I don't see where we gain any time. Suppose we have an appointment. We can't take time to use this method, but we could put in arsenic and let the patient go away and stay for a week or ten days, and make an appointment for him to come back. Perhaps you might have some soreness come up in a week's time. I have had very few cases of poisoning. I have had a few cases, but they were on account of carelessness. As far as poisoning is concerned, I think it is a very rare thing. Pressure anesthesia works in a few cases, only a few, in my hands, but as the doctor said, there are very few people that will stand the pain.

Doctor Stage.—I am very much interested in hearing those people talk who have had so much trouble with pressure anesthesia. I am of the same opinion as are some of the other doctors here, and I will say frankly that I do not like pressure anesthesia to take out a pulp—that is, I cannot do it successfully with pressure anesthesia—if the pulp is sore and inflammed. If the pulp is sore you will certainly have trouble with pressure anesthesia. If you are going to use arsenic you will have to adjust the rubber dam, and if the pulp is not in an inflammed condition, I can take out the pulp with the pressure anesthesia while you are adjusting your rubber dam and getting ready for operation. In any case except where the pulp is sore and inflamed I like the pressure anesthesia method better.

Doctor Adams.—There are two extremes on either side of this question, but radicalism on either side is not necessary. The radical man is not always right. There is just this thing about it. When you see a man advocating a special line of practice, I say to myself that this man must be successful. Why? It is simply a question of ability and perseverance. If I work simply to become proficient or skilled in one particular line, I will be a failure; but if I study out the technical operation and diagnose the case before attempting an operation, I will be a success. Nature comes in and saves you a whole lot of trouble. Take the condition of a tooth that the doctor showed us. I could not remove the pulp either with cocaine, arsenic or sulphuric acid.

As I said in my former talk, I believe that mummifying paste is scientific. I do not use anything that is put on the market, but I go to the drug store and have my own prescription filled, right before my own eyes, and I know just what I am using. I do not use a patent prescription. This is the paste I use, and I make it myself and know just what I am using. I wouldn't use something I didn't know anything about. There are certain conditions under which we gain time by using arsenic, and in certain

cases we gain time by using pressure anesthesia. I am an advocate of pressure anesthesia, and at the same time I am advocating arsenic, and I feel that if we will carefully examine our cases and see which method we think it would be best to use, and not use just one method because we have used it for fifteen or twenty years—if we would understand the conditions as they exist—we will get on with less trouble, have better success and will not be so radical.

As I said in the beginning, it was my purpose to bring out the technical form of pulp removal—the scientific practice. Some one spoke of poisoning on account of faulty application. Well, I do not consider that worthy of making mention of, because if a dentist has that trouble it is his fault, and not conditions as they exist. I do not wish to speak of the mistakes of dentists. If they make mistakes, knowingly, they should correct them.

In any method of practice or mode of operation, if we will look the thing squarely in the face, we will have less failures, and will be less radical in our practice.

SOME IMPORTANT THINGS TO CONSIDER IN THE PRACTICE OF DENTISTRY.*

BY CHILTON E. BYINGTON, D. D. S., HARRISBURG, ILL.

In dealing with this subject, gentlemen, it is not my intention to reveal to you anything new, but only the importance of practicing some things we know so well and consider so lightly.

Firstly, following the qualification of the man, is the man himself; and herein lies the sequel of success or failure. A perfect knowledge of our profession, an aptness and love for it, will not absolutely assure success.

We, as professional men and men of one of the leading sciences of the world to-day, should be men of decency, purity and of the highest honor.

Having been thoroughly imbued with correct knowledge and these high principles infused, the foundation for success is laid.

And now we come to our practice. Let the arrangement of your office be to your own liking, but always appear inviting; and no less important is it that you should ever be neat and cleanly in person—refraining so far as possible from the use of tobacco, for there is nothing so abominable as the cigarette finger poked under

*Read before the Southern Illinois Dental Society.

the nose of one not accustomed to its use—and few women are, you know.

And then the breath of the chewer is not pleasant, saying nothing about the probability of an ugly appearing shirt front.

And the man who will go to his operating-chair and stoop over a sweet, pure woman, blowing into her face his noxious alcoholic breath, is the man who will hold lightly the character of the most precious thing God has given this earth—woman in her purity. With all his qualifications this man is not entitled to success, neither do I believe he will succeed. Yet he has lowered the dignity of our calling, he has placed upon our profession a taint which we in our lives must overcome.

I say, let our standard be the highest of any profession in the world and we will be esteemed accordingly.

How may we do this? By squaring our actions by the square of virtue and ever keeping ourselves within circumscribed bounds. You who know it not, solve its meaning.

And now at the chair:

Seat your patient, change the napkins on head rest—or reverse, if clean—and take from your cabinet a clean towel; do all this in the presence of your patient, and then proceed to wash your hands and let it be sufficiently near the chair for the patient to hear, and don't deceive yourself; they haven't anything to do but *look* and nothing passes unobserved. Return to the chair, perfume your hands slightly by touching tips of fingers of right hand to mouth of bottle containing sweet-smelling water. To a bottle of water add enough high grade perfume to give water a milk-like appearance, is good.

Further, let your instruments always be clean and never think of placing a mouth-mirror or explorer in the mouth of your patient without first carrying it to a glass of water (found on bracket), and dry with napkin; and again, a neat, clean napkin should *always* be placed over the chin when rubber dam is applied. It is also well to place a couple of drops of perfume in your chip-blower occasionally; it will nicely overcome the ugly odor of abscessed teeth that so readily permeate the bulb. Also avoid breathing heavily, and a small piece of chewing gum retained in the mouth (not chewed), will give the breath sweet odor if detected.

The few things here set forth may seem of small moment to

many operators, yet each step is all important to the patient, and vastly important to you if you care anything about the impression you make on your patient at the outset. To practice this in its entirety will consume less than one minute's time. And to practice this is making the correct impression on from one to twenty patients each day. Do you want a better guide? Does anything more surely reveal the character of the operator than to make an examination with a blood-stained mouth-mirror, and an explorer to correspond? Gentlemen, these little points briefly given are nothing more than acts of cleanliness and we certainly owe our clientele nothing less.

And is this all we owe our patients? No; honest treatment and the highest-grade work possible for us to give. We, of course, can look back and see many imperfect operations, but if we will only give these observed weak points our reinforced skill, we are gradually attaining a point of perfection.

Be honest, and deal with your patient as you would have one deal with you in the event of your not knowing what was best and should offer yourself under similar circumstances. Don't find false cavities; don't extract unnecessarily; don't crown teeth that can be otherwise saved. And it matters not as to the nature of the operation, be patient, merciful and sympathetic.

The operator who makes a practice of losing his patience at the chair will some day find himself longing for a *patient* to occupy that chair.

I have lost my temper a few times to my humility, but this isn't all. I believe I lost a patient, gained an ugly impression and a harmful effect each time I did it.

Be merciful, for your operations are painful enough at best, and you will find no patient but who is sufficiently refined to appreciate feeling.

Be sympathetic, for nothing goes farther toward the alleviation of pain, so promotes a kindly feeling, and lastly, it creates words of commendation.

Be kind, cheerful and polite, on the street and in your office.

If every one would practice this, how much better the world would be; and in the language of Ella Wheeler Wilcox:

"Do you wish the world were better?
  Let me tell you what to do.
Set a watch upon your actions,
  Keep them always straight and true.
Rid your mind of selfish motives,
  Let your thoughts be clear and high;
You can make a little Eden
  Of the sphere you occupy."

And what a vast opportunity for the professional man to scatter sunshine and happiness along his pathway of life. And

"Do you wish the world were happy?
  Then remember, day by day,
Just to scatter seeds of kindness
  As you pass along the way.
For the pleasures of the many
  May be oft-times traced to one,
As the hand that plants an acorn
  Shelters armies from the sun."

And are not these pleasant duties as well as helpful practice builders?

And now lastly: What do we owe our profession? Certainly the best our technical skill can give to the estheic, a clean life that will advance our standard and a regard for ethics that will not insult the dignity of our profession. I never see a dentist bill-boarded but what I am remined of the Cremo cigar, and feel to a degree humiliated.

Gentlemen, the time is ripe for professional idealism and we, as men of this particular branch of science, have before us a magnificent opportunity to personally stimulate our profession to a higher standard, and by degrees let us advance on and on till the goal of scientific perfection is attained: and in our profession we can rejoice in the proud distinction of having in it only men of good morals, men of lofty ideas.

THE ETHICAL RELATION OF DENTIST TO PATIENT.*

BY A. C. M'ALPIN, D. D. S., WARREN, PA.

It is peculiarly the prerogative of the dentist to study and, as far as possible, relieve those abnormal conditions which arise from the fact of his subjects being a living, sentive organism with whom he comes into contact almost invariably under depressing influences. It is to these particularly, their effect upon the patient and those about him that I will direct your attention, and leave it to your deductions to measure the degree of ethical responsibility resting upon the dentist.

Understanding and bearing in mind the inter-relation between the physical and metaphysical planes of our being, and the contagion of the emotions (rightly understood) arising therefrom, leads us to a clearer and more forcible apprehension of our responsible position as servitors of the public.

One's first thought in preparation for dental education is, how may I most quickly and surely acquire technical knowledge and manipulative skill sufficient to qualify for practice? Then follows the curriculum of the college which more and more demands a knowledge of many lines of heretofore-unthought-of study, which are found to converge and bear directly upon the dentist's work. The building up of dental structure mechanically, the replacing of its lost members and the elimination and prevention of pathological conditions therefrom, involves a thorough knowledge of structure and organic function, not alone of the regional base of operation, but of the entire man, physical, mental and moral.

After becoming established in practice we give due regard to the fact that of course we must be pleasant at all times, and occupy cheerful quarters, must join this or that lodge, the church and Sunday school (largely for the good they may do us) and get our brightest veneer on for special society patients. We give little attention to the vital connection between the morbid mind and body of the patient, and the anticipation of the operation which causes it all, except so far as to devise means by tonic and sedative medicine to get out from under its worst effect; furthermore, we give no attention to the potent influence which his depressed condition exerts over us and others about him.

*Read before the Lake Erie Dental Society.

We have all suffered from particular members of our clientele who have lain awake nights, dwelling in dread of the operation to come, be it near or far ahead, and who bring to us shattered nerves and bodies and minds unfortified for any operation. We have time and again stood over the patient at the beginning of an operation and gathered ourselves together, determined that our calm force shall dominate and bring him to a state of quietude and confidence, which alone can put him in a proper mood for best results; worse still, we have endured through long operation the stifling axillary fetor superinduced by sudden dominancy of a depressing emotion of fright.

As physiologists, we know that during depressing emotions the respiration is slower, circulation more languid, and that every bodily function is less vigorous Fright kills. Anger in the mother poisons the milk for the nursing babe. Morbid mental conditions leave an unmistakable mark upon the body. Whatever is repugnant to the *moral* sense is harmful to the body.

Conversely we know that during hours of cheerfulness and pleasureable excitement the respiration is more rapid, circulation quicker and that other bodily functions run at an increased rate. This could not be true unless the *cells* of which the bodily organs are made were themselves more active, and cellular activity means metabolism.

My thesis is to show that emotion is a *mental* process, it affects metabolism, both in the secretions of the body and also that kind of metabolism which affects muscular energy, and that it is demonstrable by qualitative analysis. For the experimental proofs which follow, and many clarifying expressions, I am indebted to Dr. Elmer Gates, of Washington, who has further proofs more technical and intricate than those cited here, and which will be published by him later.

Metabolism is, as you know, the general name for all the chemical and nutritive changes taking place in the protoplasmic body of the cells of the human organism. This process is automatic and occurs only in a living thing. If the cell be *dead,* chemical change may occur, but no nutritive, assimilative changes. Metabolism is therefore a *life* process.

A unicellular organism that cannot *feel* is dead; to *feel* implies the possession of mind. To adapt the acts to ends implies mentality. Vitality is mentality and *vice versa.* Metabolism is a *life* process.

Remembering this, recall that the chemical processes which are constructive and which are a gain to the organism are called anabolism; whilst those which lower the tide of life are called catabolism. This latter fact is common knowledge among physiclogists. Doctor Gates' contribution, that it is a characteristically mental process is not so well known. The important fact is that the good emotions, that is, those which are pleasurable, cheerful, comforting and happy, augment anabolism; whilst the evil emotions, those that are painful, depressing and sad, augment catabolism; the good emotions produce anastates, elixir, building material, and are life-promoting; the evil produce catastates, and are life-destroying.

Now the mind, which acts upon he body chemically through the mediation of emotion, consists of intellectual functions, of emotive functions, of conative (desire) or volitional functions and of a deep and broad undercurrent of subjective processes.

The province of the intellect is to know, that is, it is purely cognitive, the province of emotion is that of a unique kind of excitement produced in the subjective states by our appreciation or valuation of any cognitive state; much of that which the intellect knows and the emotion feels arouses a motive for action, which action is carried out under a series of conations (desires). In other words, we determine volitionally that subject upon which our mind shall dwell, we deliberate upon it and the emotion which follows is the index to the appreciation or valuation we have given it; and in degree the subjective states are manifest.

As a mater of fact we may have no emotion that has not arisen, primarily, from conscious thought; and we know that in emotion we have the great mainspring to action—thence arise our desires. The following experimental proofs show clearly the short path from conscious cerebration to catastates, and subsequent impulse to catabolic action. I quote Doctor Gates:

Proof 1.—"A student (T. J. A.) partially voided the bladder hourly so that the urine could be analyzed continuously. Immediately a qualitative analysis is made of the amount of urates, oxalates, indigotin, etc. After several days have established a standard, experiment can be begun. The diet, the exercise and the social life should be unexciting, and as uniform as possible in repeating the experiment.

"During the night my pupil was awakened every two hours by an alarm clock, and the bladder was voided and fluid carefully labeled for subsequent examination. We found a given amount of the salts above mentioned. Every day there was a slight periodical variation, but a uniform variation according to well-known functional periodicity of metabolism.

"The morning of the fourth day he was asked to recall to his memory every sad incident in his life, to talk about it and to dwell upon it so as to bring forward the depressing emotions, and this he succeeded in doing, and he was aided in this by my conversation; several sad and pathetic extracts were read and he was asked to read them in turn, and they dwelt upon certain matters about which he was much worried. The third hour after these emotions had been dominant the amount of urea, which is the final product of the decomposition of the cells of the body, and indigotin was more than doubled. A similar test on three other pupils confirmed the fact that the depressing emotions directly increased catabolic metabolism. The salivary secretions of other students were chemically tested in normal state and after intense anger was found to contain from 50 to 200% more sulpho-cyanides than in the normal state." Many of us know the bitter taste after intense anger.

"I have obtained proof that there is a qualitative difference in catastates thrown out through the bodily secretions during *definitely* different emotional conditions." Hate, jealousy, resentment, remorse, etc., catabolic, are examples.

In order to determine the effect of differing emotions upon the fatigue point of a muscle, I quote the following: "I arranged a dynometer of four ounces resistance and asked the student to uniformly pull down the spring to a uniform distance, keeping time by the motion of a pendulum. On several successive days, with an interval of several days between each test, I determined his fatigue point to be 2,100 motions. One month thereafter it was again determined and it was 1,942. The next week before determining the fatigue point he was given several items of good news which made him happy; an informal social occasion contributed to the cheerfulness of the half day during which the experiment was being made, and he was asked to dwell upon those incidents in his life which had been most happy, and after the two hours of cheerful dominancy the fatigue point was found to be 2,980.

"Three weeks later the test was repeated, but after he passed through three hours of depressing emotion; the fatigue point was 1,640. It is essential to add that this is one of my pupils, and he has been trained in the art of regulating the intellective and emotive functions, and he was able to produce a more than usual intensity of either the depressing or the cheerful emotions."

The two above experiments are easily understood and are unassailable proof that emotion affects metabolism both in the secretions of the body and also in that kind of metabolism which affects muscular energy.

You will hardly question the great benefit that would result to ourselves, our clientele and the general public, could these facts be understood and acted upon by everyone. This, of course, cannot be for a long time, but realizing them ourselves what is our manifest duty? Is it not to begin with ourselves and exert an anabolic influence? So far as possible we should crowd out the depressing subjects, which come to us, by persistent domination of the cheerful, the comforting. This is the only method by which we may ultimately gain mastery over our bodies.

It is a well-known fact that whenever a plexus of the body is aroused by an increased flow of life through it, superinduced by a pleasureable emotion, as we repeat this by volition, a continuous demand at shorter and shorter intervals for its arousal is manifest and a chronic automatic excitement is ultimately obtained. Nature is anabolic. Pain and moral repugnance tend directly to render this automatic action inoperative by lowering and stemming the tide of life.

It is well-known, too, that by a deliberate dwelling upon cheerful, comforting subjects we lessen the tendency to the attachment to thought promotive of evil; determinedly attaching our conscious thought to the good, the kindly, the best we can see in everything about us will ultimately drive out the base and unjust, foes to our bodies and minds. Is it not our duty to make these facts known to our patients that they may understand and profit thereby? The old saying, "be virtuous, and you will be happy," and such generalizations are all right as far as they go, but here you appeal strongly to their instinct of *self-preservation,* and arouse their sense of duty to those around them.

A young woman patient of mine had for many months suffered extremely by fact of her companions continually warning

her that she would certainly be tortured when the dentist got at her teeth. It so happened that her teeth were scarcely sensitive at all, but it took her some time, in her highly nervous state, to find it out; she finally did and now she comes in throwing anabolism right and left. We have all had this sort of experience time and again.

Practice anabolism in the family, remembering to leave the catabolism of the office behind you. Keep in mind that emotions are subtly contagious—there is a dynamic property in them not generally recognized.

A persistent domination of your cheerfulness will drive out the depression of the patient, and with a judicious addition of instruction on the lines indicated in this paper you will start him off in the right direction. Strive for a relaxed condition of your own body, under stress; avoid tension in the throat, and raised diaphram over sensitive patients, it restricts circulation and wears you out.

Go only to the anabolic drama, read and have anabolic literature on your stands, and so far as possible make the visitor feel glad that he has seen you and your office.

We feel keenly the need of sterilized hands, napkins and instruments; just so surely do we need anabolic surroundings, body and mentality. Imagine an anabolic clientele. We would then be visited by clean bodies and mouths, pure minds and hearts, and the disagreeable features would be minimized.

In the paper is given briefly a little light upon the laws which express themselves upon the operation of the mind in its relation to the body. Each of you will draw deductions from facts peculiar to your own experiences in practice, and their ethical value will be apparent.

Suffice to say, one cannot know these truths and endeavor to learn more of them, without placing an ethical value upon many actions and conditions heretofore unheeded.

The potency of our conscious thought, which we control, in its relation to our subjective states and our physical bodies, suggest the impress that must be made upon other minds and upon other matter. Take this as a central idea, think much about it and you will inevitably discern the marks of the basic principle upon which evolution in its endless adaptations operates, *and man's partnership therein.* The fact of this last accentuates the burdens

of ethical responsibility resting upon us, and the increase of this burden as we more and more realize the immutability of the laws which evolution and man's progress toward perfectibility, the God-hood, the perfect stature to which all must attain.

OUR CODE OF ETHICS.*

BY CAROL M. M'ELROY, DELAWARE, OHIO.

While the trend of the times is toward a more universal acknowledgment of the importance of ethics as applied to the dental profession, there seems to be an increasing inclination to regard our present code of ethics in the light of a farce. Judging from the articles and discussions that have been published in our various dental magazines during the last twelve years, this attitude is growing more and more pronounced. There are even signs and symptoms of a disposition to declare it absolutely harmful and detrimental to the existence of an ethical atmosphere. As it was formulated for the purpose of creating an ethical atmosphere, there is something radically wrong if it be defeating its own intention.

But it is. Does not the difficulty rest with the individual rather than with the code itself? Look back and note the beneficial results since its adoption as our standard; study the code, sentence by sentence, and see what a power for good it is capable of being.

The first recorded code of professional ethics was formulated by a French surgeon six hundred years ago, and from that day to this, every vocation which has proven itself entitled to rank as a profession, has recognized the necessity for protecting and maintaining its dignity by means of a similar method.

It is but a few years, comparatively, since dentistry was neither an art, science, nor a profession. Step by step, little by little, it rose above the level of blacksmiths, barbers and silversmiths, until to-day it is recognized as a scientific profession. With its advancement came the need of legislation, and Alabama, in 1841, set an example by enacting the first law to regulate the practice of dentistry. Other States followed Alabama's lead and

*Read before the Ohio State Dental Society, December, 1903.

sundry laws were passed. But while the legal standing of the profession was becoming somewhat satisfactory, from an ethical point of view the outlook was most discouraging.

A few of the greater minds realized the need of a standard of professional honor containing principles which would appeal to the higher instincts, that would serve to bring about the elevation of the individual members of the profession; which would foster the development and growth of the true professional spirit, and which would eliminate the increasing commercial tendency which threatened to permanently denominate dentistry as a trade, dental offices as shops, and patients as customers.

Such a code was formulated, and then efforts were directed toward securing its recognition and adoption by the different dental organizations. In 1866, the American Dental Association showed its appreciation of such a need by formally adopting the code, and refusing to recognize delegates from all societies that did not accept it.

A mere handful of men pledged themselves to abide by its requirements, and the wonderful results we see to-day—the influence of the action of those few men cannot be estimated. Dentistry would never have attained the place it holds had it not been for the enforcing of a portion of this code. We see what the profession has gained by the observance of some of the requirements, and it should open our eyes to the possibilities contained within the other portions which we are accustomed to ignore.

Every dental society makes its admission to membership conditional upon the acceptance of this code of ethics, yet many—perhaps it would be nearer the truth to say the majority—of the dentists neither know nor care what its requirements are with the exception of two, one relating to professional courtesy, and the other dealing with advertising. We are apt to think of the code as treating only of these two subjects, and to feel that our whole duty is accomplished and our ethical standing assured if we but refrain from advertising and are on speaking terms with our professional neighbor.

The most concise definition of the word "ethics" is "the science of human duty," which means our duty to ourselves as well as to others.

This age of finer civilization in which we are beginning to live demands purer motives and higher ideals. It takes for

granted that an ethical purpose is the vital factor of every achievement, and the dental profession can ill afford to ignore this.

We must either progress or fall back; there is no such thing as standing still, and our progress will be measured largely by our adherence to our accepted code. For, through the efforts of the profession, the public is rapidly learning that this is our ethical standard and will judge us accordingly.

For years the spirit of commercialism seemed the greatest obstacle in the way of progress, and those interested in the welfare of the profession concentrated their efforts upon enforcing the section regarding advertising, almost to the exclusion of every other precept contained in the code. No opportunity was lost in which to denounce the advertiser; every effort was made to constantly keep before the public the fact that advertising was distinctly and unqualifiedly contrary to our code of ethics. This position is being held with just as much ardor at present as at any time in the past. Consequently, to-day, the ability to distinguish between a commercial business and a scientific profession is rapidly becoming universal, and as the education of the public increases, so do the ethical demands made upon the profession.

For a long time, in fact, for many years, legally chartered dental colleges were tremendously at fault and the profession is still suffering from the effects. It was customary for colleges to advertise their clinics, and these advertisements commonly read: "Teeth extracted free—silver fillings twenty-five cents—gold fillings and plates for cost of material." Where is the difference between a corporation that advertises an amalgam filling for twenty-five cents, and an individual who advertises one for fifty? Simply twenty-five cents, that is all—the principle is the same. It is not at all surprising that some of their students imbibed this mercantile tendency and adopted the same method in building up and retaining a private practice.

The colleges at last saw the error of their ways and the wisdom of teaching by example as well as precept, and now usually simply announce their clinics open. But even this ought not to be—the clinics should be for the benefit of those who are financially unable to seek the services of a dentist, and charitable organizations should be the medium through which patients are secured. When we think of the number of free hospitals and dispensaries, it does not reflect greatly to our credit that we are so far behind the medical profession in this particular.

With the advancement of civilization comes a more potent recognition of the spiritual and a rising above the material. We are learning that in order to live well ourselves, we must live to others. Consequently that portion of our code dealing with professional courtesy is assuming a greater significance. It reminds us that "Human judgment is finite and ought always to be charitable," and that "Charity is a virtue of the heart and not of the hands."

The presence of the fraternal spirit indicates the possession of charity. We may have charity without fraternity, but if fraternity exists, charity must follow. Section 4 of the second Article in our code demands the cultivation of both, and if but one-tenth of the energy expended in enforcing Section 2 (which concerns advertising) were directed toward the fulfilling of this requirement, it would contribute in a marked degree to the advancement and uplifting of the profession.

The bond of professional brotherhood is rapidly gaining in strength and extent, but it is only within recent years that its influence has been felt outside of a comparatively limited circle. Time was, and it is not as long ago as we could wish, when the large majority of dentists looked upon their professional brothers as business competitors—the man who gave of his knowledge was the exception. To-day how different are the conditions. In all parts of the world are held meetings where members of the profession give gladly and freely of the best they possess. It has been argued that this changed condition of things, this spreading of the fraternal spirit, is due to the altered conditions of life in general; that the tendency is in the direction of broad and liberal thought, and that the world has swung into a new era which makes practical applications of the teachings of Christianity.

Granted that all this is true, for it *is* true beyond a doubt, it does not alter the fact that nearly forty years ago our profession was given a code incorporating principles which, if given even slight consideration by those who accepted it, would have brought about this same result many years earlier.

Perhaps now that we are beginning to devote more thought to that intangible yet forceful quality known as ethics, each of the tangible principles advanced in our code will be regarded as of greater importance than heretofore.

The percentage of dentists who take an active or even a

passive interest in the different State and local societies is lamentably small compared with the number engaged in practice.

It is greatly to be regretted that so little attention is given to that clause in our code directing that special encouragement should be given the young practitioners. Think of the numerous graduates who are launched every year from the dental colleges in Ohio alone, then look around you at the annual State meeting and note the small proportion present. This is due largely to indifference and carelessness on the part of the older practitioners —older as regards professional life. To be sure, the program sent out every year is always prefaced by a very cordial invitation to attend the meeting, but how much more effective this would be were it followed by a personal invitation, accompanied by words of hearty welcome, from one who has already experienced the benefits to be derived from these gatherings.

It is not only the recent graduate who is "conspicuous by his absence" from associations, but there are also many dentists of mature years and experience who are plodding along in a narrow, restricted path, utterly oblivious of the duty they owe their profession, their patients and themselves. Some are simply indifferent, others are unwilling to expend the few necessary dollars, while still others are skeptical of friendly overtures and doubt the sincerity of motives prompting such good fellowship. With a more intimate knowledge of our code as it is and a consequent recognition of the duties existing between members of the profession, will come a proportionate decrease in the number of those who now hold themselves aloof from their fellow-practitioners.

From time to time the assertion has been made that we do not need any lengthy code of ethics, that it is altogether superfluous, as it is, after all, simply the Golden Rule in another setting. This is a mistaken idea. The Golden Rule teaches us our duty to others, and while our code does embody within it this same principle, it goes still further and plainly emphasizes our duty to ourselves.

"To do the best for others is finally to do the best for ourselves" is, of course, but the wise heads who formulated our code realized that the increasingly rapid pace of the world would leave no time for theory or search for hidden meanings, and that every principle must be clearly and concisely stated.

The acceptance of our code of ethics means the acceptance of

it as a whole, and there is no greater stress laid upon the subject of advertising than upon the question of manners, morals and mode of living. "Skill and clearness of judgment" require a cool head, steady hand, and delicate touch, and these are incompatible with dissipation in any form. It should be remembered that social recreation and social dissipation are two things widely different though frequently confounded.

We can neither escape nor shirk the responsibility of personal influence which every individual wields, consciously and unconsciously, upon people and conditions by which he is surrounded. The principles contained within our code are certainly expressive of high ideals and, as has been said, "What is life for if it is not to make the ideal real?" Constant aspiration means consequent elevation. The whole is dependent upon the component parts, and just in proportion as the individual members of the profession realize their responsibilities in this direction, will the desired elevation of dentistry be attained. Any law, social, civil, religious or professional, becomes a nonentity to the one who habitually ignores it, with the invariable result that the individual, but not the law, suffers.

The statement that our code does not amount to anything shows a lack of familiarity with it. That it is not the power it was meant to be, and is capable of being, is to the discredit of the profession and does not in any way affect the integrity of the code itself.

The substitution of the Golden Rule for our present code would answer as far as it goes, but it would mean the elimination of some principles that just as closely affect the honor of the profession as do those that would be covered by the Golden Rule. Moreover, it is very doubtful if the mere alliteration of the wording would bring about any greater change in the attitude of the profession than may be secured by the present version.

Why should the need of a code be deplored? The world is governed by law—nothing is left to chance.

We have been given a standard well qualified to secure public recognition of dentistry as a dignified, honorable and scientific profession. It is only by the universal observance of that standard and the faithful discharge of the obligations imposed by it that we can attain for our profession that position to which it is justly entitled.

DISCUSSION.

Dr. C. M. Wright, Cincinnati.—In regard to ethics. Of course it is one of the foremost subjects, possibly, in philosophy. Every philosopher and religious doctor of any distinction since Aristotle's time has been interested in the subject of ethics. We have had different codes of ethics by these philosophers. Aristotle, Spinosa and others, and nearly all philosophers have studied this subject of ethics, or fellowship with men, that man should bear to his brother and sister and to his God. Religious writers, religious leaders and founders of religion have codes of ethics. Confucius, five centuries before Jesus was on the earth, offered what might be called a code of ethics. When one of his pupils asked him to give one word, one single word that would serve as a guide for all of their lives, Confucius answered, "Is not 'reciprocity' such a word?" "Do unto others as you would that they should do unto you," is the best code of ethics for us all.

In regard to a code of ethics, or "our code of ethics," which, I may say, I have not read, I have always felt that it was not quite necessary to have a code, although the paper to-day showed I was in the wrong, perhaps. Of all the dentists with whom I have associated in the last forty years in this country and in Europe, a large majority do not need a code of ethics, and a few, in the minority I am glad to say, you could not hold them by any code. So I thought a code was not absolutely a necessity. Those in the majority, and the men we have generally associated with, the men in the societies and everywhere, seem to be governed by some code of honor that exists in the breasts, and that seemed to be ordinarily sufficient. There may be reasons, however, why we should have, for the benefit of those who are in our association, not our friends, but for the benefit of the profession at large, there may be a necessity for a code. It seems to me we might generally be satisfied with that and not be whipped by it, into anything; we should feel as if we were compelled to have some certain code, that we should have this feeling Burns expressed in regard to honor, which perhaps I won't remember rightly, I never can quote anything:

"The fear of hell's a hangman's whip,
  To haud the wretch in order;
But when ye feel your honor grip
  Let that aye be your border.
Its slightest touches, instant pause,
  Debar a' side pretenses,
And resolutely keep its laws
  Uncaring consequences."

Dr. P. S. Bollinger, Dayton.—I feel as Doctor Wright has said, that there should be a code of honor. There seems to be such a commercial spirit existing with our American people; they like a little commercialism in whatever they do.

How many of us are there who do not like just a little bit of advertising sometimes? We come to these State conventions for profit, for mutual profit, and yet a great many like to have their names in the papers announcing that they have been to the conventions and read papers, etc. They go home and some one gets hold of the fact that they have been to the conventions and gives them perhaps a dozen lines or half column of advertising at so much per line. Now, I don't want to accuse any of the gentlemen here, because I don't believe any of them would be guilty of stealing a little advertising in that way; but somehow or other it gets into the papers.

My idea of a code of ethics is one which is governed by the principle of not taking advantage of each other, taking advantage of our professional brethren, take advantage by saying to your clients we have got something new, or something just a little finer, or just a little cheaper than our fellow practitioner. I have the idea a code of ethics would be against that; we should not do that; and yet I must believe many of our brethren in this profession who claim to be strictly ethical, do nearly as much advertising as some of those men who say they will make crowns for a dollar and a half. I really don't believe a real code of ethics is practicable, for the reason that there is that individual spirit which exists with the American people, their right to do just as they please in business, commercial or professional matters. It means that they are not to be bound or tied to any code of that kind.

I suppose that we will have to rely, as Doctor Wright said, upon the honor that exists between men, to do as nearly right as we know how.

Dr. G. H. Wilson, Cleveland.—I believe in a code of ethics for the simple reason, as some one has said, that the American people are not the ones to be told what they should do; they are independent; and as long as every one is going to do or say the thing that he thinks is right or wrong, it is necessary that we have a code of ethics.

If we go back to the early times, to the time of the greatest teachers, we find that they thought it necessary to have a code of ethics. These old philosophers all thought it necessary to have a code of ethics. I do not know that in business matters of this kind where one asks himself as to what is right or wrong, it is necessary, and consequently I am in favor of a code of ethics. I don't believe, at the same time, that a man will have to read over that code of ethics every week to keep in touch with its teachings. The words will be engraved upon his heart so it will not be necessary to go over it and consider it, but at the same time he could have an idea of his chosen profession.

I would speak on one point especially in our code. The duty of the young man coming into a new neighborhood is to call upon his brothers in the profession and let them know that he is in the community, and that he desires to be a professional man with them. It is not the etiquette in society where the older one in the neighborhood must call upon the new comer. It is the reverse. The old practitioners are not supposed to know who comes in; but if the young man calls upon the older one, he will ex-

tend the right hand of fellowship, and at the same time the young man will show that he proposes to do what is right.

Dr. H. L. Ambler, Cleveland.—It has been said by one speaker on the floor that dentistry was something new. I wish to call attention to the fact that four or five thousand years ago in Egyptian times there were surgical physicians in the high art of teeth. We have history to that effect. Coming down a good many hundred years I wish to make a statement that is also true, that before 1622 the title of D. D. S. was first conferred upon Gillespie, and others in France. From that time down to the present you know more of the history and I want to give those facts so it will never be said again that dentistry is something new, and if you know these two points you can positively be historical in refuting that kind of statement.

I think it would be a good plan for the Ohio State Dental Society to have sufficient copies of the code of ethics printed to send them to every member, and then they would not be in position to say they had never seen it nor read it. We all know that the code of ethics has nothing that is binding legally; it is simply a high moral obligation; that is all there is to it. You cannot make a man by law—you cannot force him in any way if he does not observe the code of ethics. I know of colleges that are adopting ethics. Some one of the professors lectures upon the subject more or less, and the faculty see that students perfectly agree with the code of ethics.

Dr. W. I. Jones, Nelsonville.—I believe Æsculapius was the first to form a code of ethics for an association, and I would like to go on record as saying that I believe that the professional men themselves are to blame for the standing which this profession now has. There is so much commercialism. Now, I believe further, that the blame lies closer to the dental colleges than to the profession at large.

I was glad to hear Doctor Ambler say that the colleges had adopted ethics. I think that it is just a late movement, and am sure it will be beneficial. I just wish to place the blame where it belongs. I don't believe the cheap Johns and the colleges are all to blame; we are to blame the most.

Dr. H. A. Smith, Cincinnati.—This discussion on the code of ethics carries me back to the time when the present code of ethics was adopted. I was a young practitioner, and I remember the meeting of the dental association at Chicago. The code was presented at the close of the session when very few were present to discuss it. I recall a man who was present at the last meeting whom you would recognize as representing the science of the profession, a man who stuck to the association to the very end, a man who was received by the members with enthusiasm, Dr. George Watt. Doctor Watt was a local man and had been practicing a good many years, and being chairman of the committee, naturally stated a code of ethics which was in accord with the medical profession, and which is to-day an excellent code. It is a splendid document, conscientious and covering the

subject fully. Of course you cannot restrain a man or bind him by this code; but it was considered a good thing, and its influence was for the best. This code was published in the journals and distributed even in this society. I had the honor of being on the committee to revise that code. It did not need revision, except two or three changes. It was to be published in the transactions of the association, but I have never seen a publication of it in any journal, never have seen a copy of it except in the transactions of that society. I therefore think Doctor Wright has read the code, but he has forgotten.

The code is a remarkable document, selecting those portions of ethics which govern our actions, or should govern them. It should be read yearly, at least, I think, and it would strengthen you in the practice. You see Doctor Watt being a medical man refers to reciprocity; that would stamp specialists out. He said it was our duty to the public, our duty to the patient, to hold to a high standard of fees. And he said that no man should operate on his patient unless in fine physical condition. A man who has been on a jag the night before has no business to go to his patient. Bacon has said, every man has a duty to discharge to his profession. It is especially true in the dental profession. Professor Seeney said recently on a public occasion that "medicine, combined with science, is the noblest profession of them all; but without science, it is the meanest profession of them all." If we would paraphrase that a little we would say, dentistry combined with science is the noblest profession; without science it is the meanest.

I arose to call attention to the fact of the history of the adoption of that code, and I want to say again that I think it will do a great deal of good, and I do think we ought to have printed copies of the code here. I haven't one myself—it is in a bound volume—and they ought to be distributed for all of our students, and if we do this and all stand good for the code I think we will make our mark in the new century.

Dr. C. R. Butler, Cleveland.—I am very glad Doctor Smith has given a little history with reference to the original adoption of this code by the dental profession, and secondly, I want to congratulate the society in presenting such a scientific resume of this subject, and I doubt whether there is any gentleman who could have presented it in so nice a manner. I do not agree with that part of the Scripture which says, let women keep still; I don't believe in it. We have brothers in the profession, and sisters in the profession, and we should have just as much faith in the one as in the other.

Now, in reference a little bit further to the history of this code which some think is so unessential. Doctor Wright said he didn't believe he ever read or saw it. I don't know that he is a man who needs to read or see it. I have known him for years, and I think he has a high standard of ethics, but of course he don't want to compliment himself.

Now, Doctor Smith has referred to the history and the time this code was adopted in Chicago at the old American Association, and I don't think it would take him very long if it was not prohibited to name over

those who were there. He said there was a small attendance—but it was the giants of the profession who were there to receive it and discuss it. I don't remember very well whether I was one of the giants or one of the pigmies; but I was there. I remember what Doctor McQuillen said when he was introduced, and it was not in opposition especially; but as Doctor Smith says he did not think it was superfluous—did not know whether any one thought it superfluous. But Doctor McQuillen thought it was not necessary to have such a code—such a law. If they haven't got the sense of honor and honesty, as gentlemen, you cannot make them so by law. That was his sentiment.

Now, gentlemen, that is all there is to ethics, whether it be of the dental profession or the medical profession. Once we come in we ought to consider it our bounden duty to observe it. This fee portion of it is a very small one, and yet it is the one haggled and jiggled over whenever we meet—whenever the subject comes up. It has a very little bit to do with it and yet it seems to stick in the crops of everybody, and especially the younger men who start up. "I don't care anything about it," they say; "I don't care a d—n for the profession; they don't do anything for me."

There are many little points that we ought to touch upon and there are lots of things to observe; it is not new, but we should always keep it quite fresh in our memories.

Dr. Carol M. McElroy, Delaware.—The attitude which seems to be most universal is that we do not need a code of ethics. In that case we must divide the dental profession into two classes—those who do not need a code of ethics, and those who won't be influenced by it. You can take the same question of the law, where generally there are a large number of people who are not affected by it; there are a large number of people who do not need the moral laws. There is another class of people who will be brought under its influence for good and brought into the class of people who are above the need of such a law.

In our dental profession there are members of the profession whom I have known personally, and I have been in the profession thirteen or fourteen years—and I have known a great many who were influenced for the best and highest by the code of ethics. Of course there is a class of people who use it right here in Columbus who won't be affected by our code, and at the same time there are people who would be influenced to the best by it, and would be brought into the fold, and it seems to me that we cannot afford to do away with our code of ethics as it stands, and as it is. It certainly wields an influence for good in every way, and as there seems to be some who have never read the code of ethics, I claim a woman's privilege and say, "I told you so!"

PRESIDENT'S ADDRESS.*

BY C. T. FELT, D. D. S., KANE, PA.

We meet at this time not only in response to our annual custom but as well to celebrate the fortieth anniversary of our organization. Therefore a special greeting and a hearty welcome is extended to you all. May our presence here be both a pleasure and a profit to us. May the good we obtain from that which shall be presented be an inspiration to us to discharge more faithfully than ever before our duty toward those whom we as professional men serve.

On August 23, 1863, pursuant to a call previously circulated, a meeting was held in Jamestown, N. Y., and the present Lake Erie Dental Association was born. No bells were rung, no whistles sounded, no cannons fired, but in the most orderly manner, Dr. James Harrison was elected the first president; Dr. H. B. Blair, of Columbus, Pa., the first secretary, and the child was christened "The Dental Association of Western New York and Pennsylvania."

Forty years have seen this favored offspring grow to mature manhood. Forty years have witnessed much merited progress. Few among those who were early identified with the Association in its small beginnings are living to-day to witness its healthful growth. All honor to the pioneer whose ardent labors have made it possible for us to enjoy the results to be witnessed on all sides to-day.

Forty years have brought many marvelous changes—all in the line of an advancement not easily comprehended. Progress these days does not plod; it leaps with mighty bounds, leagues at a time. Thousands of miles of railroad have been built in these four decades and the science of railroading has evolved from a crude state to an all but perfect system. Forty years ago to travel across the Continent was a much dreaded task; to-day we enter a well-appointed Pullman, retire as usual and dream pleasant dreams or, perchance, make unkind remarks about our snoring neighbor who has to sleep in the next berth to keep from waking himself up, while we are speeding along, drawn by a panting iron monster at the rate of sixty odd miles an hour. No wonder that President Thwing declares "The symbol of the age is not

*Read before the Lake Erie Dental Society.

the cap and gown, but the steel rail!" And the index finger now points to the iron and steel industries that have taken such wonderful strides that our puny minds can scarcely grasp the magnitude of a corporation capitalized at more than a billion dollars.

Four decades ago a man worth a quarter of a million was almost idolized. He was accounted immensely wealthy. To-day the plutocrat is scarcely reckoned "rich" unless he can count his millions by the hundreds.

Professional life has kept pace with commercial life, scoring no less progress; and not the least among the professions is dentistry. Since the time of the organization of this Association dentistry has grown faster and made more progress than any other of the professions.

The higher ranking professions were wont to look upon a dentist as a mechanic only, rather than as one practicing a titled profession to which his skill as an artisan is but a necessary incident. But we have compelled them by our advanced knowledge of, and skilled work upon, the parts operated, to regard us differently. Ours to-day is a lofty place on the famous ladder of "good works."

Forty years ago there was no law regulating the practice of dentistry. Any man who desired could "hang out his shingle" and practice dentistry without let or hindrance. Now we have strict and explicit laws correcting this evil and The Dental Association of Western New York and Pennsylvania struck the first blow. Instead of no dental education required as then, we now have four years' college course and this is not more than sufficient to give what is considered fundamental.

But with all the education one can secure in four years, if we cannot make a practical application of it we fail as skilled dentists. We must have practiced eyes, keen judgment, and well-trained fingers if we would succeed. So let us learn to put what we know into what we do—our education into our practice. Not only should we make a practical application of our education, but we should weave in many threads of conscience. For "our work," says Mrs. Browning, "is better than what we work to get."

Oh! how often do we see work carelessly done, little or no conscience woven therein. Surely if we would keep before our minds the principle laid down by our Master Workman, "All things whatsoever ye would that men should do to you, do ye even

so to them," we would see little of careless work. "A thing that is worth doing at all is worth doing well."

A question that comes to me often and doubtless to you all is, how shall we educate the public to an appreciation of our profession—not only the skill required to properly treat and restore a broken-down tooth, but the art that we should put into that work? our efforts to approach nature in the effect. Walk up and down your streets and you can see the lamentable lack of this education in the glaring gold crowns, from one to five or six, as an otherwise beautiful person speaks in passing.

To educate our patients during the time of an appointment is good so far as it goes. It does not, however, reach the masses that ought to know these things and that are prone to patronize the quacks who thus desecrate our profession. Newspaper articles are looked upon as a means of getting your name before the public, therefore not ethical. So I maintain that this timely task becomes a question of "How?" and to my mind the newspaper article with the "ego" so carefully avoided that the profession of dentistry shall not be utterly swallowed up by the individual dentist, would be the better way.

Not only is the genaral public ignorant of the uses and abuses of our profession, but many, may I not say most, physicians have failed and continue to fail to obtain and to exercise a proper knowledge of dentistry. During a conversation with a physician regarding the saving of teeth, with a haughty toss of the head and an air of superiority he exclaimed: "I think conservative dentistry can be carried too far." Another physician attempted to correct a slight irregularity in one of his daughter's teeth by grasping it with a pair of pliers wrapped with a napkin and twisting it a few times a day. Result: Failure plus a conspicuous gold filling on the cutting edge.

Time and education will correct these evils. We have earned our right to be heard. Our work speaks for us. Forty years of increasing momentum impels us onward and, I trust, upward. Dentistry is no stagnant pool; it is a rushing river in these initial years of the twentieth century.

We are still going forward with the same speed that characterized the last forty years. Future days will bring us added successes. Nor would we allow any man to put on the brakes; better let him put sand on the track, as our motto is "More speed."

In conclusion, what can be said of the year just closed? Porcelain work has been brought much nearer perfection, especially inlay work, and the time seems to be near when we can insert a filling in an anterior tooth that will not be conspicuous, yet will be durable.

Much valuable work has been done in bacteriological research by Doctor Kirk and others, directed more especially to the fluids of the mouth, making it possible to diagnose more accurately diseases of the mouth and general system.

Much progress has also been made in every department. In the future as in the past, *all* progress, although attributed to the profession in general, will be attained only by individual effort. Therefore we should each for himself adopt the Harlem Page motto, "I will act as if I were the only one to act, waiting no longer for others."

A METHOD TO PREVENT RECURRENT SEPSIS IN ROOT CANALS.*

BY D. SHEEHAN, D. D. S., CINCINNATI, OHIO.

Recurrent sepsis in root canals will invariably cause trouble in the apical space if the foramen of the affected tooth is not perfectly sealed, because septic material, gases and micro-organisms will find a means of exit only at this point granting a perfect filling in the crown. Recurrent sepsis will not occur in the affected tooth if it be once rendered sterile and then properly sealed against transudation of fluids from the apical tissues. The apical foramen then, perfectly sealed, seems to me the key to success or failure following root treatment. I desire to present to this society a method for which I claim no originality, but certainly must claim for it a high degree of merit. It was suggested to me over two years ago by Dr. G. S. Junkerman and was published by him in last June's issue of THE DENTAL SUMMARY. My observations and deductions are purely empirical and I have learned from experience the conditions, not the scientific reasons of success.

The root of a tooth should be properly opened up, for unless

*Clinic before the Ohio State Dental Society, December, 1903.

we have access, our success is not assured. No operator will claim that each root canal treated and filled can be thoroughly opened up as far as the apex. But always do the best under the circumstances. We will assume that at the time of sealing the apex the root canal has been rendered perfectly sterile. A small wisp of cotton is wrapped around a smooth broach, dipped in tincture of iodine, then into finely-powdered tannic acid, then introduced to the apical end of the affected canal. This is tamped into close approximation with a pumping movement of the broach. All excess iodine (and there should be very little) should be absorbed with cotton afterward removed, the root canal wiped with absolute alcohol, and then filled with whatever material suits the pleasure of the operator. The splendid results obtained from this method in the numerous cases under my observation in a dental college clinic, where it is put to most strenuous tests by students of little or no experience, only proves the more its value; it is the exception and not the rule for teeth so sealed to give further trouble. It is used in teeth from which the pulp has been removed under pressure anesthesia as well as in putrescent canals. The points brought out in Doctor Junkerman's paper and which may be emphasized are as follows: Cotton is a perfect barrier to prevent the ingress and egress of micro-organisms, as is proven in the bacteriological laboratory. Iodine is a germicide antiseptic and antipyretic. Tannic acid will render connective tissue inert.

The strongest argument against the use of this method lies in the fact that discoloration may result. But this is due to faulty manipulation always. Another negative argument sometimes used is that the apex cannot be reached, and that the cotton will become jammed midway. This seems another argument in favor of its use, I think, as it is a means of knowing when you fail and gives you still another opportunity for success.

AN INTERESTING CASE.

BY C. F. RODGERS, CONNEAUT, OHIO.

An interesting case came to me recently which involved the restoration of the crowns of the upper left cuspid and lateral which had been broken off by being struck with a croquet ball.

The lateral was entirely broken off, but the cuspid was still clinging to the gums. Both teeth were broken well to the gum line labially and lingually nearly one-fourth inch under the gums.

The patient was in agony and narcotile was administered and both pulps removed at once. There was quite a little hemorrhage which was easily controlled with adrenalin chloride.

After drying the canals thoroughly, the apex was filled. Platinum one five-hundredth thick was then burnished on the broken-off pieces of tooth, the roots being broken so far under the gums that it was impossible to get an accurate impression or to burnish properly on the end of the root.

A little of Brewsters' porcelain body was then baked to the platinum simply to assist in retaining the shape, then placed on the root, which it fit absolutely, a dowel inserted, facing selected and ground to place, pins bent over the dowel and all removed, filled with body and baked, then platinum stripped off and completed crown cemented to place.

Result.—A crown which fitted the root absolutely. A material under the gums which is non-irritating. No loss of time, as both teeth were in place in two hours. Little discomfort to the patient, as the burnishing of platinum was done out of the mouth on the broken pieces of tooth. A crown which cannot be excelled for strength, beauty and durability.

CATAPHORESIS.*

BY W. T. JACKMAN, CLEVELAND, OHIO.

Used the Price cataphoric apparatus. Desensitized a posterior proximal cavity in upper left central for a boy about sixteen years old. This cavity was an exceedingly sensitive one. Others had tried to prepare it in the usual way, but failed. Ap-

*Clinic at the Ohio State Dental Society, December, 1903.

plied the current for eighteen minutes, cut out most of the decay, applied ten minutes longer and then did more cutting that was really necessary without hurting the patient in the least.

RESTORING THE PROXIMO INCISAL CORNER OF INCISOR WITH PORCELAIN.*

BY H. C. RAYMOND, D. D. S., DETROIT, MICH.

Cavity preparation, showing retention form, with decided angles and step on the lingual surface, also the lingual surface cut away in excess of the labial to aid in keeping filling from being displaced by outward pressure. Margins perfectly smooth and no outward bevel.

Burnishing platinum matrix directly into the cavity and method of doing it. The building of the porcelain in layers and blending the colors to show the yellow, and opaque appearance at the neck of the tooth, and the transluency of the enamel at the incisal edge: also showing the careful building of the porcelain to the perfect margins of the matrix so that the finished filling fits flush and requires no grinding down after being set. Setting of filling with cement under pressure, selecting a color of cement that matches color of tooth.

METHOD OF MAKING PLATES WITHOUT THE USE OF WAX.

BY W. H. JACKSON, D. D. S., ANN ARBOR, MICH.

In THE SUMMARY for May, 1904, appears an article with the above title, by A. S. Page, of Columbia, Tenn.

The method is old. At least dating back to 1866 to my knowledge; not my invention. It requires much more care in vulcanizing or the gutta-percha will be as brittle as glass, and soon break. If properly done, the plate may stand for many years.

Easy-packing rubber can be used in the same way by first letting the cast become dry and coating the model with white

*Clinic at the Ohio State Dental Society, December 3, 1903.

shellac. Warming the cast slightly the rubber will adhere to the cast, and then pressing the teeth to their places in the rubber, as described in the article referred to.

To avoid trouble when flasking, drill a hole through the plaster cast, where the disk for air-chamber is usually placed, then soak the cast in water until all air is driven out, thus avoiding the lifting of the gutta-percha or rubber from the model. I seldom make full plates in this way, but partial plates very frequently with rubber. Rubber is much more reliable for strength than gutta-percha.

NEURALGIA AND DEAFNESS CURED BY EXTRACTION OF TEETH.

BY DR. ROBERT WAKEFIELD, CRANFORD, N. J.

Mrs. C., age 38, presented May 12, 1904, to have the few remaining teeth in the upper arch extracted. I began with the left upper third molar, which was removed with some difficulty owing to exostosis. This patient has suffered from severe neuralgic pain in that side of the head and neck, and has been completely deaf in the left ear for four years, during all of which time she has been under a physician's care. The patient returned the following morning to inform me that the pain and deafness had entirely disappeared, which state of affairs continues up to the present writing, June 14, 1904.

A CASE IN PRACTICE.

DR. W. A. SUTHERS, SHELLSBURG, IOWA.

July 7, 1904, Mr. D., aged 44, came into my office to consult me about having some roots removed. I examined the case perfectly and found six anterior and two posterior roots in a very bad state, four being badly abscessed, and all being decayed to the process. I told him that it would be necessary to take an anesthetic. He wanted to know if I gave gas and I told him yes. We decided to administer gas. I called in a physician to help me. I examined the case again thoroughly. Everything

being ready, we started to give the anesthetic. Patient seemed to be taking the gas nicely, and after giving it awhile with no result, we examined the valves and found them working in good order. I inhaled some and found that two gallons nearly put me to sleep.

We then proceeded to start again, this time we forced it a little faster, still the same result. We tried again, with the same result, the patient complaining of a slight sickness of the stomach each time. Patient not showing the slightest sign of going to sleep, we decided not to try any more at the present, so dismissed the patient till some future time. We were slightly puzzled at the result and did not know what to attribute the result to.

July 16th the patient again presented himself. We proceeded as before, only to be balked again. Once more we tried, this time the patient becoming restless and wanting to rise up in the chair, muscles became fixed and rigid, but we held him down as best we could, thinking he would finally go to sleep. Not so; he became worse, so we had to desist. As soon as we removed the gas he became as wide awake as ever and quieted down, and seemed as if nothing had happened. We concluded that it was useless to proceed further, having failed so many times with the gas. The patient did not wish to leave the office without having the roots out. We decided to give him ether, the doctor examined him and said that he could take ether with safety. We let the patient rest for awhile, and everything being in readiness we again proceeded. It may seem strange, but the man seemed to eat it without any effect on him whatever. We tried for over an hour but without producing sleep, the only effect being that he was slightly stupified. I next injected a local anesthetic and removed the roots without much trouble on account of the man being in a semi-stupified state. It seems strange that both anesthetics should fail, and we were unable to account for it. Whether it is idiosyncrasy or not, we have been unable to tell.

I would like to hear from any one who can enlighten me on the subject.

SUGGESTIONS

GUTTA-PERCHA CEMENT.

Doctor Ferris.

I wish to add one word in favor of Doctor Evans'' gutta-percha cement. I have used it since it came out in long bridges and single crowns, and have had considerable trouble; but it worked out all right. If I may make a suggestion to those who have not used it, it would be this: In setting with gutta-percha cement you need to have a pillar in the center of your crown. If you do not, the gutta-percha will gradually press out of shape. In the course of three or four months it will work up under the gum tissue and produce gingivitis, sometimes quite acute, because it does not dissolve, and the gum, if forced too high, will not tolerate it. But if you place a little cement in the grinding surface of the crown, while you are fitting the gutta-percha the first time, the root being wet, you force it into position and the cement will set; remove and add what more gutta-percha you need, and when your bridge is finally set, the cement pillars rest upon the posts and prevent any movement of the bridge toward the gum tissue, thus obviating this difficulty.—*Items.*

HOW TO REPAIR A BELLOWS.

Doctor Hutchinson.

I just want to mention a little thing which may be of help to some who have bellows such as are used with the Jenkins furnace. If the rubber stem to which your tube is attached becomes detached, and you are left with a bag without any stem to which to attach your tubing, take one of the valve stems, such as is used for the rubber tires on your bicycles, screw it down and you have a perfectly secure attachment.—*Items.*

REPAIRING OF BROKEN CROWNS WITHOUT REMOVING THE PIN.

J. E. Taft, New Haven, Conn.

Having had occasion to replace a broken pivot tooth or Logan, an idea came to me, or I recalled seeing an explanation in some magazine, of a method to replace the crown without taking out the pin.

First, clean away all remnants of porcelain. With a fine round bur drill away the cement around the pin to a depth of one-eighth of an inch, or more if you want more strength. With a piece of thirty gauge platinum make a roll to fit the pin in root and in length from the bottom of space made by taking out the cement to a little above the top of the pin. Burnish the top of the tube over the pin. It does not need soldering if the tube has no great holes to let in the porcelain body.

This is placed in position and platinum foil placed over it and burnished to the end of the root as in making an ordinary pivot crown. A facing is ground to place with pins clasped around the tube pin; wax is applied to the back and all taken off, invested and baked as usual The foil is stripped from the bottom, leaving a perfect fitting crown.

As to strength: it has a double holding power, that of a pin and will stay where any pivot tooth will. If preferred, the facing can be backed, and attached to the tube and platinum foil with gold solder.—*Items.*

DON'T BARB THE POSTS OF CROWNS.

H. A. Cross, Chicago.

In an effort to add retention qualities to porcelain crowns do not barb the post, as it will in most cases interfere with the proper adjustment of the crown. This was told you a few years ago by Dr. W. H. Taggart, but it is important and will bear repeating. A better method is to file small notches resembling saw-teeth on the sides of the post. This will not interfere with the adjustment of the crown and will add materially to the retention of the post in the root. The canal can also be prepared with retaining grooves cut around its sides with a wheel bur, but care should be taken to avoid cutting through the sides of the root.—*Review.*

GOLD AND PLATINUM FOR BACKING FACINGS.

Doctor Worboys.

I take a great deal of satisfaction in backing facings with gold and platinum plate, that is plate made by sweating gold onto platinum; it is gold on one side and platinum on the other. If I want a yellow effect in the facing I put the gold next the porcelain, if I wish a blue effect place the platinum next the facing. This backing can be used quite thin, and is readily adapted and will not burn off as easily as a gold backing. I think it a great advantage in bridge and some crown-work.—*Register.*

SWAGE FOR ADAPTING CAPS TO END OF ROOT.

J. Mills, Brantford, Can.

Cut a disk from a rubber band (such as is used for holding books) about the size of the end of the root. Burn a hole through the disk to fit over the post, and with a bur in the engine bore a hole into the end of a piece of wood which is about the size of the end of the root. Place this over the post and use as a swage.—*Review.*

TO PREVENT GUTTA-PERCHA FROM DRAGGING.

W. H. H.

I believe one of the secrets of success in placing gutta-percha fillings is to keep them from dragging away from the walls of the cavity while manipulating. To prevent this, I coat the surface of the cavity, after carefully drying the same, with a solution of resin dissolved in chloroform.—*Brief.*

FILLING WHERE THERE IS EROSION.

F. W. Stephan, Chicago.

In cases of erosion make the filling concave on the surface to protect margins from acid secretions, which will then accumulate in the saucer-like depression and expend their effect on the filling material.—*Review.*

PULP-CAPPING MATERIAL.

S. H. Guilford, Philadelphia, Pa.

A neighboring practitioner who has experimented in the direction of securing a compound that could be easily applied and that would become hard very quickly, told the writer that his best results were obtained by incorporating equal parts of salol and thymol with sufficient commercial zinc oxid to give it body. The salol and thymol were made fluid over a water-bath and the zinc oxid added and thoroughly incorporated before the mass had time to congeal.

A heated burnisher or other instrument applied to the solid mass would fluidize and take up enough of the material to flow over the pulp exposure and cover it.—*Stomatologist*

MANIPULATION OF CRYSTAL GOLDS.

F. W. Harnden.

In the manipulation of the fiber or crystal golds, perfect condensation is attained, not so much by the force of the pressure on the face of the gold as the even spreading of the mass under the rocking motion of the rounded face of the plugger. When properly worked this gold moves sideways as well as in the line of force applied, and adapts itself to cavity walls most beautifully. For that very reason it is not necessary to apply much pressure to the enamel edges so long as they are carefully covered, for many failures, especially in morsal cavities in molars, are due to the shattering of the enamel prisms next the filling by the plugger. The surface and its borders are hard enough, as may be discovered by trying to grind them smooth. —*Gazette.*

STERILIZATION OF INSTRUMENTS.

To sterilize small instruments such as broaches, pulp extractors, hypodermic needles, clamps, etc., Dill, of Basel, recommends boiling in oil or glycerin; the heat can be raised to 200 degrees C., forming an ideal sterilization for these delicate instruments, so difficult to clean, with no danger of rusting.—*Brief.*

EDITORIAL

THE INTERNATIONAL DENTAL CONGRESS.

The International Dental Congress held in St. Louis August 29th to September 3rd, was attended by a representative body of dentists from almost every country. About sixteen hundred dentists registered and the congress proved a great success.

Howard J. Rogers, director of congresses of the World's Fair, presided at the opening exercises, prior to the election of the president, and delivered the address of welcome, in which he reviewed the work of previous congresses and the rise of the dental profession. His speech was preceded by the invocation offered by Reverend Doctor Harris H. Gregg, of St. Louis.

Doctor H. J. Burkhart, Batavia, N. Y., was elected president of the congress, Doctor E. C. Kirk, Philadelphia, Pa., secretary-general, and Doctor M. F. Finlay, Washington, D. C., treasurer.

Doctor Burkhart made an address accepting the honors of president, and Doctor Kirk also spoke. Doctor Charles Gordon, of Paris, retiring president of the International Federation, also spoke. The long list of appointments of prominent members as honorary presidents and vice-presidents for the United States and foreign countries, was announced by the organization committee and ratified by the congress.

Addresses of welcome were made by Doctor Charles C. Chittenden of Madison, Wis., on behalf of the National Dental Association; by Doctor Burton Lee Thorpe, of St. Louis, for the dentists of Missouri and St. Louis; by Doctor Harlan, as vice-president of the International Dental Federation, and by Doctor Otto Zsigmondy and Doctor R. Weiser, both of Austria, for the foreign delegates. Then came the presentation of a delegation of accredited representatives of the various governments, who made brief responses.

These included: Doctors A. Burne, Australia; J. M. McGee, Canada; E. Sauvez, France; Prof. W. D. Miller, Germany; J. E. Grevers, Holland; B. Guerini, Italy; Jose J. Rojo, Mexico; J. D. Losada, Spain; L. C. Bryan, Switzerland; J. Y. Crawford, Nashville, Tenn., for the United States; E. P. Tignor, for the United States army dental corps; J. M. Whitney, Hawaii; Louis Ottofy, Philippine Islands; Salvado Pratto, the new Argentine consul at St. Louis, representing Uruguay; Joseph W. Noble, China; Benjamin Vidauroa, Nicaragua; R. Henriksen, Norway, and N. S. Jenkins, Germany.

Papers were presented in various sections and not in general meeting. The sectional plan is unsatisfactory, for often two or more papers one desires to hear are read at the same hour in different rooms, and unfortunately the meeting rooms at St. Louis had such poor acoustic properties it was impossible to hear the speakers plainly even at a short distance.

The quality of the essays presented was good, as will be seen when they are published in this and other dental journals.

The clinics were numerous and as satisfactory as like clinics always are.

Doctor W. D. Miller, of Berlin, Germany, was awarded the gold medal for the best professional paper read before the congress. Doctor Eugene S. Talbot, of Chicago, Ill., gained first honorable mention, and Chev. Doctor Vincenzo Guerini was accorded a vote of thanks. The organization committee awarded a gold medal to Doctor Sauvez, of Paris, for the best private exhibit, and a silver medal to Chev. Doctor Vincenzo Guerini, of Naples, Italy.

The following were elected as the American representatives on the executive council of the International Dental Federation: Doctor Burton Lee Thorpe, St. Louis; Doctor B. Holly Smith, Baltimore; Doctor William Carr, New York City; Doctor A. W. Harlan, New York City, and Doctor E. C. Kirk, Philadelphia.

With a brief farewell address, President H. J. Burkhart formally closed the International Dental Congress at 1 o'clock September 3rd. A few minutes later the congress adjourned *sine die*. About four hundred members attended the closing general session. A number of speeches were made, all of a congratulatory nature. Among the speakers were Doctors A. H. Thompson, Topeka, Kan., on behalf of the organization committee;

Doctor C. C. Chittenden, Madison, Wis., retiring president of the national association; Doctor Waldo E. Boardman, Boston, new president of the national association, and Doctor A. H. Peck, Chicago.

Dr. Thompson offered a resolution extending sympathy to the Russian delegates because of the war which had prevented them from attending the congress. A rising vote of thanks was extended to Doctor Corydon Palmer, the oldest practicing dentist, for his attendance.

The next congress will be held in Berlin, Germany, in 1909, in connection with the semicentennial of the National Association of Germany. The exact date has not been set. Professor W. D. Miller, of Berlin, an American by birth, will probably be made the president.

INTERNATIONAL DENTAL FEDERATION.

The meeting of the International Dental Federation preceded the Dental Congress meeting in St. Louis, August 26th-27th.

The Federation comprises the following commissions:

I. The Federation Dentaire Internationale, composed of a general Executive Committe from eleven (11) countries;

II. A Commission on Education, to which all affiliated Dental Societies and their members are eligible for membership;

III. A Commission on Hygiene and Public Dental Service, which is open to the members of all affiliated Dental Societies throughout the world;

IV. A Commission on The International Dental Press.

During the meetings of these various commissions the following papers were read:

In the Commission on Education:—"A Resume of the Status of Dental Education in France," by Doctor Charles Godon. "The Necessity of Establishing Libraries in Dental Colleges," by Doctor W. E. Boardman, of Boston, Mass.; "A Brief Consideration of the Grading of Students in Dental Colleges," Doctor C.

N. Johnson, of Chicago; "International Dental Education," Doctor H. L. Banzhaf, of Milwaukee; "The Development of Dental Education in the West," Doctor A. H. Thompson, of Topeka, Kas.; "Education," Doctor R. B. Weiser, of Vienna, Austria; "Method of Teaching Operative and Prosthetic Dentistry," Doctor M. Roy, of Paris, France; "Note on the Life of Fauchard," Doctor G. Viaux. These papers were followed by a discussion of the report of Doctor Weiser on "Public Dental Service in the Army."

These papers were read before the Commission on Hygiene and Public Dental Service:—"Emergency Dentistry and Complete Dentistry for the Poor," by Doctor Charles Godon; "Public Dental Service," by Doctor E. Forberg, of Stockholm, Sweden, and another paper with the same title written by the late Doctor J. Franck of Vienna, Austria. It was read by Doctor George Cunningham, of Cambridge, England.

Papers were read before the International Dental Press by Doctors Burton Lee Thorpe, of St. Louis, and J. Endleman, of Philadelphia.

It was decided during the general session that the federation would establish a Dental Review and Central Bureau, through which all advances made by the profession would be made known to the public in four languages—English, German, French and Spanish. The following committee was appointed to look to the welfare of this plan: Doctor J. Endleman, of Philadelphia; B. Platscluck, of Paris, and Sulirana, of Madrid.

During this session proposed rules and regulations were adopted and provision made for an Executive Council of fifty members. The countries represented are those of Europe and America. All first-class nations, except Russia, are to have five representatives, Russia to have four. All other nations will have one and two representatives.

At the executive meeting of the federation the following officers were elected: President, Doctor W. D. Miller, Berlin; vice-presidents, Doctor E. Suavez, Paris, and Doctor R. B. Weiser, Vienna; secretary-general, Doctor Edward C. Kirk, Philadelphia; assistant secretaries, Doctor Burton Lee Thorpe, of St. Louis, Doctor Schaffer-Stuckert, of Frankfort, Germany, and Doctor Paul Guye, of Geneva, Switzerland; treasurer, Doc-

tor Florestan Aguilar, Madrid. The office of third vice-president was created. It will be filled by a member from Great Britain, who is to be elected by the British Dental Society.

The federation will meet next August, 1905, in Switzerland. The city has not been named, but probably will be Basle. The new officers of the federation constitute what is to be called hereafter the bureau of the council. It has been delegated power to settle all controversies or issues between now and the next congress in Berlin, 1909. The new executive council of the federation consists of fifty members, five of whom are from the United States. This council holds over until the next congress. It will name one-third of the members of the committee to organize the next congress, all of whom will be Germans, the remaining two-thirds to be selected by the German National Association.

The federation organized two new international commissions, the Commission of Jurisprudence and Professional Ethics, for which Doctor William Carr, of New York, has been nominated president, and the Commission on Nomenclature, Literature and History. The following nominations have been made for officers of the old commissions: Education—Doctor T. W. Brophy, Chicago, president; Doctor Morris Roy, Paris, secretary. Hygiene—Doctor L. O. Bryan, Basle, Switzerland, president; Doctor George A. Roussel, Paris, secretary. Dental Press—Doctor Forberg, Sweden, president. A standing committee was organized to plan for the establishment of an international bureau for the publication of a bi-monthly analytical review in five languages. Doctor J. Endleman, Philadelphia, is chairman, with the following members: Doctor Platscrik, Paris; Doctor Subriana, Madrid, and Doctor S. H. Guilford, Philadelphia.

The committee to promote the establishment of dental corps in the armies and navies of the world was made permanent, with Doctor William Donnelly, of Washington, D. C., as its chairman. The committee expects to get a bill through Congress organizing a dental corps in the United States army on the same footing as the medical staff.

The International Dental Federation is the most important dental organization that we have and it is hoped that the good work it has planned may be fully carried out.

SOCIETY

NORTHERN INDIANA DENTAL SOCIETY.

The sixteenth annual meeting of the Northern Indiana Dental Society will be held October 18th and 19th, at Huntington, Indiana.

It is expected that we will have the largest attendance of any meeting ever held in this section of the country and you cannot afford to miss hearing such essayists as Dr. G. V. Black, Hart J. Goslee, F. E. Roach, George E. Hunt, Wm. T. Reeves, E. X. Jones, J. Q. Byram, G. E. Johnson, F. R. Henshaw, F. M. Bozer, Lavinia B. McCollum, C. G. Keehn, and many others who consented to appear on the programme, besides a very attractive list of clinics demonstrating all of the newest and most valuable things in practice.

All the leading manufacturers have signified their intention of making an exhibit of their products.

Every up-to-date dentist will be present. Are YOU coming?

Special social features for Tuesday evening.

Remember the date.

OTTO U. KING, *Secretary.*

OHIO STATE DENTAL SOCIETY CLINICS.

Any member of the Ohio State Dental Society, who has a clinic to present at the next annual meeting in December, will please write C. A. Hawley, Chairman of the Clinic Committee, 185 E. State Street, Columbus, Ohio.

SOUTHWESTERN IOWA DENTAL SOCIETY.

The Southwestern Iowa Dental Society will hold their eighth annual meeting at Osceola, Iowa, October 11th and 12th

We had a splendid meeting last year, but will have a better one this year. You cannot afford to miss it. Come join us. Help along the good work.

J. A. WEST, *Secretary,*
Creston, Iowa.

BOARD OF DENTAL EXAMINERS OF THE STATE OF OHIO.

The regular semiannual meting of the Ohio Board of Dental Examiners will be held in Columbus, November 29th, 30th and December 1st, at the Hartman Hotel.

Applications for examination should be filed with the Secretary by November 19th. For further information address,

H. C. Brown, *Secretary,*
185 East State St., Columbus, Ohio.

AFTERMATH

PERSONAL AND MISCELLANY.

Dentist Drowned.—Dr. J. S Coman, New York city, was drowned at Atlantic Highlands, while bathing August 17th.

Chinese Dentist Weds an American Lady.—Dr. Tang Yawn Fond, of Boston, was married August 24th to Miss Alice G. Murrie, of Dorchester, Mass.

Commits Suicide.—Dr. A. L. Fish, Bridgeport, Conn., after taking carbolic acid, shot himself with a revolver and died before medical aid could reach him.

Texas Dentists to Organize.—Dentists from Belton, Lampasas, Bartlett, Granger, Holland and McGregor met at Temple in August and formed an association.

Prehistoric Dentistry.—From the fact that he has found traces of filing on teeth among our forefathers of the stone and bronze ages Herr Reiser, a German dentist, infers that there were dentists in prehistoric times.

Nebraska State Board Officers.—At a meeting of the state board of dental examiners August 14th, Dr. L. N. Wente of Lincoln was elected president, Dr. W. N. Dorward of Omaha was made vice-president and Dr. A. V. Meese of Auburn, secretary.

Re-elected Supreme Councillor.—Dr. R. H. Pierce, of Duluth, who for the past six years has held the position of supreme councillor of Psi Omega Dental Fraternity, was re elected at the national convention, held in St. Louis Thursday, September 1, 1904.

Will Travel.—Dr. F. D. Sherwin, a Lincoln, Neb., dentist, left about September 15th to spend a year in travel, accompanied by Mrs. Sherwin and daughter, Margaret. Mr. Sherwin expects to return and resume his practice at his present location at the end of the trip.

Loss by Fire.—The following dentists suffered loss by fire the past month: Dr. C. D. Elliott, Franklin, Pa.; C. A. Sweeney, Inde-

pendence, Ia.; Chandler and Thometz, Marquette, Mich.; D. J. Pollock, Sterling, Ill.; Gratiot Dental Parlors, Port Huron, Mich.; Odontunder Parlors, Dunkirk, N. Y.

The Dentist's Joke.—"No," said the dentist, "it would simply be a waste of good money for me to advertise in the newspapers."

"Why do you think so?" queried the persistent solicitor.

"Because," explained the tooth carpenter, "my work speaks for itself through the mouths of others."

Northern Iowa Dental Society Officers.—President, A. W. Beach, Sheldon; vice-president, C. L. Topliff, Decorah; secretary, F. C. Blanchard, Waterloo; treasurer, C. N. Booth, Cedar Rapids. Decorah was chosen for the next meeting which will be the date set by the by-laws of the organization, the first Tuesday in September.

Couldn't Fool Him.—Mr. Hayrix—Heow much fer pu'lin' a tooth?

Dentist—One dollar with gas, fifty cents without.

Mr. Hayrix—Say, young feller, don't yew try none uv your bunko games on me. Mebby I dew look kinder green, but I ain't green ernuff ter give up no 50 cents extry fer gas when it's broad daylight, by hen.

More Thieves.—At Red Bank, N. J., Dr. J. W. Throckmorton lost $200 worth of gold and instruments August 8th. Dr. F. E. Light, Waltham, Mass., lost about $40 worth of supplies by theft August 1st. Dr. A. E. Kellogg, Cresco, Ia., $65, August 6th. Drs. Watts and Wall, Springfield, Ill., $100, August 7th. Dr. W. A. Enyon, Easton, Pa., $35, August 12th.

Wisconsin State Dental Society Officers.—At the last meeting the following officers were elected: President, H. T. Sackett, Fon du Lac; first vice-president, E. C. Oviatt, Columbus; second vice-president, P. B. Wright, Milwaukee, Wis.; secretary, W. H. Mueller, Madison; treasurer, A. Gropper, Milwaukee. Next meeting will be held at Oshkosh, July, 1905.

National Dental Association Officers.—President, W. E. Boardman, Boston; vice-president from the east, John I. Hart, New York; vice-president from the south, B. F. Luckie, Hill Springs, Miss.; vice-president from the west, Wm. Conrad, St. Louis; secretary, A. H. Peck, Chicago; corresponding secretary, C. S. Butler, Buffalo; treasurer, V. E. Turner, Raleigh, N. C.

New Dental Board for California.—Governor Pardee has appointed as members of the State Board of Dental Examiners: Dr. E. G Howard, of Los Angeles, vice Dr. F. R. Cunningham, resigned; Dr. Arthur D. Mayhew, of Palo Alto, vice Dr. G. E. Shillings, of Marysville, term expired; and Dr. George A. White, of Santa Barbara, vice Dr. H. R. Harbinson, of San Diego, term expired.

Died. Dr. George H. Churce, Portland, Oregon, September 4th, aged 74 years. Dr. Ferdinand Hasbrouck, New York city, August 9th. Dr. L. Bush, San Francisco, Cala., August 20th, aged 50 years. Dr. M. D Nesbitt, Sioux City, Ia., August 13th. Dr. A. C. Holder, New York city, August 9th, aged 45 years. Dr. M. E. Braddon, London, Ont., August 9th. Dr. C. P. Artman, Waterloo, Ia., August 26th.

Porcelain Tooth Material Found.—August 22d, some Italians, while working on the new freight line at Doylestown, Pa., discovered what is regarded as a large and valuable deposit of titanium, and the men are hoarding up the mineral in their cabins. This deposit is said to be of the red oxide variety, hence very valuable in the manufacture of false teeth. Experts have been sent for to make a careful analysis of the find.

Delta Sigma Delta Officers.—At a meeting of the Supreme Chapter, Delta Sigma Delta Fraternity in St. Louis, August 30th, the following officers were elected for the ensuing year: P. S. G. M., G. N. West, Chicago; S. G. M., R. H. D. Swing, Philadelphia; S. W. M., J. D. Patterson, Kansas City, Mo.; S. Scribe, C. R. Turner, Philadelphia; S. Treasurer, H. C. Raymond, Detroit; S. Historian, J. P. Buckley, Chicago.

Blue Light for Relief of Pain.—Professor Redard and Professor Emery of Geneva have discovered a new anesthetic for use in dentistry. Experiments to learn the effects of colored lights upon the nerves revealed that blue light is extraordinarily soothing. A patient was put in a dark room and his eyes were exposed to a sixteen-candle blue light for three minutes. This caused him to lose the sense of pain and the tooth was then painlessly extracted without the after-effects of ether or chloroform.

Married.—Dr. G. F. Hitchcock, Plymouth, Ind., to Miss Mary Kendall, of Plymouth; Dr. W. F. Bealty, New Orleans, La., to Miss Bessie Wood; Dr. W. H. Larrabee, Cologne, Ger., to Miss Ethel Drawbridge Canandaigua, N. Y.; Dr. M. M. Woodward, Derry Station, Pa, to Miss Nann Sweeney, Appolo, Pa.; Dr. Geo. Saddler, Lagrange, Ky., to Miss Charlotte I. Stark; Dr. A. N. Davis, Berlin, Ger., to Miss Helen W. Proctor, Chicago; Dr. L. W. Atkinson, Salem, O., to Miss Mabel L. Pettit, Garfield, O.; Dr. R English, Clay City, Ind,, to Miss Nellie Slinkard of Tanner, Ind.

Yi Huing's Teeth.—A few days before war broke out between Russia and Japan, Yi Huing, emperor of Corea, was trying to persuade a German dentist to come to practice in his court. The inducements were $150 a month salary, $15 for rent, $500 for traveling expenses each way, $2,000 for instruments, $25 for the laboratory; one hour a week duty in the palace looking after the imperial molars, privilege of private practice, two months' vacation annually. Since February 8th,

his majesty has other aches, which, acting as counterirritants (Russ and Jap) have caused him for the time being to forget his teeth.

Virginia Dentists Elect.—The Virginia State Dental Association elected the following officers: President, R. L. Simpson, of Fincastle; first vice-president, J. L. Walker, of Norfolk; second vice-president, Edward W. Eggleston, of Richmond; third vice-president, L. M. Cowardin, of Richmond; treasurer, W. H. Ewald, of Portsmouth; recording secretary, George F. Keesee, of Richmond; corresponding secretary, J. Hall Moore, of Richmond; executive committee, E. P. Beadler, of Danville; A. L. Stratford, of Richmond; W. H. Mosely, of South Boston. The time and place of the next meeting are left to the executive committee.

The Dentist Owns False Teeth Until Paid For.—Justice Ries, Milwaukee, August 20th, decided that the mere fact that a dentist has fitted teeth into a man's mouth does not constitute delivery of the teeth until they are paid for. This momentous decision was announced in the case of Searing vs. Schneider, in which Peter Searing of Caledonia, Wis., wanted to recover from Dr. Julius C. Schneider of this city, a certain plate of seven teeth. The testimony showed that Dr. Schneider had taken the teeth from the patient's mouth, to fix them, and that he had refused to replace them until he should have received the balance due on their price. "When the teeth were originally placed in the man's mouth," decreed Justice Ries, "it was done on the stipulation that they be paid for. The plaintiff did not pay the contract price, but walked away with the teeth in his mouth. Held, that the defendant was justified in recovering the teeth, which were still his property and holding them until the full price should be paid. Judgment for the defendant." No notice of appeal has been filed.

Municipal Dentistry in Germany.—Under date of July 29, 1904, United States Consul E. Theophilus Liefeld, of Freiburg, Germany, transmits the following clipping from the Daily Mail (London) of July 23, 1904:

"The dental statistics gathered in many European cities have revealed such an alarming condition of affairs that Germany, at least, has decided to adopt combative measures.

"In all large towns dental clinics have been founded, consisting, as a rule, of specially fitted-up rooms in one of the central schools.

"Fully qualified dentists are appointed, who devote their whole time to their duties, but in Stuttgart the work is done voluntarily by the local dentists. That such a movement is necessary can scarcely be doubted when one learns that of many thousands of boys and girls examined, from the ages of 8 to 13, only 2 per cent had a perfectly healthy set of teeth. To give an idea of the amount of work done in a year at Darmstadt schools it is necessary to quote the figures for 1903. During the year 1,376 children were examined, and 1,561 teeth were

filled, while 1,871 were extracted. In Strassburg 2,666 children were examined, 699 teeth were filled, and 2,912 were extracted.

"Another interesting fact is that 40 per cent of all teeth examined were bad. The method of work is very simple; the teacher brings his class to the dentist, who examines each mouth quickly and marks on the card which each child has brought with it whether treatment is necessary. If so, the child must come again on a Saturday. Russia is also joining in the movement, and has already fitted up nine such institutions in St. Petersburg alone, while Moscow has also several."

Tooth-brush Declared a Fad.—The struggle to maintain the sturdiness and stamina of our race against the fads of a refined civilization is a hard one. When our Anglo-Saxon ancestors chased each other through the forests with clubs we are told that they were scantily clad in simple raiment of fur skins. Many, indeed, may have been content with the garb that Nature gave them. But gradually the race surrendered to the effeminating, enervating influences of civilization. The descendants of that sturdy race must not only wear clothing, quite often ludicrous in its lack of adaptation to the needs and comforts of the body, but they must take baths and clean their teeth. But not all the Britons have surrendered to the sanitary and hygienic fads of our times. A noble little band in Folkestone, England, we are informed by cable dispatches in the August 28th, Record-Herald, stands out resolutely against tooth-brushes. It refuses to yield to the subtle influences that are refining the Britishers into a race of weaklings. At a meeting of a board of guardians of children's cottage homes a member of the board had the temerity to advocate the purchase of tooth-brushes for the children under their care. He even went so far as to declare that tooth-brushes were as necessary as soap and water. The motion to supply tooth-brushes was vigorously opposed. The mayor of the town attacked the idea with great vehemence, declaring that the stamina of Englishmen was being ruined by such fads. He ventured the opinion that many of those present at the board meeting had not used tooth-brushes for the greater part of their lives. And the board agreed with him, for it promptly voted down the tooth-brush proposition. The children in the cottage homes at Folkestone may not have any teeth at forty-five, but they will have preserved their stamina. "Back to Nature" is the stirring slogan of the sturdy stalwarts of Folkestone.

DENTAL BOARD EXAMINERS' CONTRIBUTIONS

CONSERVATISM IN THE TREATMENT OF LOOSENED LOWER INCISORS.

BY CHAS. C. CHITTENDEN, MADISON, WIS.

Member of the Wisconsin State Board of Dental Examiners.

The attention of the dentist is frequently called to the distressing annoyance and suffering of patients of middle age by the loosening of one or more of the lower incisors. The patient too frequently delays presenting himself until after he has known of this loosening and infirmity for a long time and has perhaps been avoiding bringing into use the teeth involved, and biting all around them, and is generally driven to the dentist at last by acute inflammation set up by some inadvertent bite upon the weak member; and he finally comes to his dentist with the full expectation that the "loose old thing" must be at once extracted. Too often the dentist, in his haste or inexperience, coincides with the patient and the offending tooth is extracted. While this is sometimes necessary, yet it is my desire to call attention to the frequent possibilities of better service for the patient by a rational, sensible attempt to restore the offending member to comfort and usefulness and hold it in the mouth as long as possible.

It is a well-known fact that one of the most important things to be done for the cure of inflamed conditions surrounding a sore and loosened tooth is the securing for it of absolute rest. If a tooth has had set up about it, in its socket, by traumatism or otherwise, any irritation inducing soreness and the thickening of the investing membrane by encroachment of calculus and congestion of the blood vessels, the first thing to be accomplished for its relief is to give the tooth absolute rest from contact by occlusion, and to hold it as nearly as possible in a stationary position. This last may be accomplished temporarily by the use of

silk ligatures which, properly applied, will secure a very considerable firmness in a very loose tooth and permit, in case of undue elongation, the use of the carborundum wheel for freeing the bite, with very little punishment. Next, any lodgment of calculus or other foreign matter about the neck and root of the tooth should be removed, as well as the circumstances will permit, and this followed by cleansing and stimulating dressings. In this way relief from the immediate inflammatory condition will be secured. After the intervention of two or three days, the inflammation will be found greatly abated and the cleansing and stimulation of the surrounding tissue may be more thoroughly repeated. The ligatures also should be renewed and made as effective as possible. This treatment should be pursued intermittently until the inflammatory conditions are controlled. Then comes the task of making some permanent attachment which shall perfectly fix the tooth and protect it from undue wrenching or exercise in ordinary mastication. The devices indicated are very numerous and very various in their structure and each individual case will have its peculiarities, requiring some special fixture which may differ from any the operator has ever made, used or seen before. Care should be taken to make them as little obtrusive and conspicuous as possible.

My attention was brought to this subject by the presentation a few days ago of a case in my own practice which had been treated by me, after the general fashion indicated above, some seven years ago. The two lower centrals had been very much loosened and the process considerably absorbed by the accumulation of a large body of salivary calculus. An ordinary loop fixture including the four incisors was made use of, and the case passed out of my hands. And this occurred about seven years ago. The patient has just now returned for further help and informs me that during the seven years nothing has ever been done in the way of removing deposits of calculus or in any way attempting to prevent a recurrence of the original trouble. The result was that the centrals had become entirely imbedded in salivary calculus and were only held in the mouth by the loop fixture and had to be finally sacrificed. If proper attention had been given from time to time, with frequent care and cleansing, there is every probability that the teeth could have been held for a much longer time in reasonable health and

comfort. For seven years, with no care, indicates a lot of possibilities under favorable conditions, and demonstrates that even with the greatest negligence on the part of the patient, and with a very crude fixture, nature will not only tolerate but condone and help overcome many abnormal things.

In the treatment of pyorrhea alveolaris, where some of the teeth become loosened, it is a very common thing to find that the application of a properly-constructed bridge will quite permanently relieve and reduce inflammatory conditions and restore the shaky members to comfort and usefulness.

One of the most effective as well as simple appliances for retaining the lower incisors in position, where the circumstances are favorable, is the cementing of a stiff, square bar of gold laid into the biting ends of the four incisors by cutting a groove across their tops. This bar may be made of clasp metal—that is, gold alloyed with platinum—to make it very firm and stiff. The ends of the bar may be turned down to form the general effect of a stiff staple, to be let into the teeth forming the abutments. I have several cases that have been successfully protected in this way for many years, and one of the best things about such a fixture is that it is practically invisible.

The object of this paper is simply to outline a condition frequently met with and one which requires our utmost skill and consideration. I have merely outlined and suggested for the sake of helping some of the younger practitioners who are very likely to be confronted with cases of this character from time to time.

A POTPOURRI.

BY M. M. HAAS, EVANSVILLE, IND.

Member of the Indiana State Board of Dental Examiners.

In asking for a paper, I have a suspicion that possibly the publishers wanted to use me as a "space filler," which somehow remotely suggests the story of the foreman of a former dental journal, who approached the editor on a still "hunt" and said:

"A space remains on the last reading page, sir, of our magazine."

"Very well," quoth the editor, "Have a man murdered in the dissecting-room of the Indiana Dental College and the crime at last brought to light by the inmates of the flat across the way."

"I have already done so, but still a space remains."

"Well, deny it then."

If such were friend Bethel's intention, it is all right and one way of getting at the root of the matter, or, might I say, matter of the root.

Yes, this matter of the root, how tangible a thing apparently, and yet what devastation follows in its wake or when it fails to sleep. To digress somewhat, a subject is never threadbare that requires all our ingenuity to successfully handle. I hope, moreover, we may not lose sight of the fact that each year a generation of beginners is ushered upon the dental horizon, who seek to know of our successes and profit by our failures, and as sure as they expect to practice dentistry, so sure will they experience the whole gamut of variations a dental pulp is capable of playing from the pianissimo of irritation to the "FF" of abscess. The whole melody often interspersed with an obligato that renders our obligations the greater, a symphony of sympathy as it were; a repeat, a rest, a final D. S. by a D. D. S.

For, isn't it a fact that the majority of treated teeth lie dormant by sufferance, rather than skill?

When we take into consideration the number of teeth whose inaccessibility to the proper reaching of the apical foramen so often enhanced by tortuous constricted canals, the reaming of which so often closes the lower third, if perchance the root meantime is not perforated.

When canals are too small to get into by the smallest broach, when temperament or a fretful patient will not permit of your doing your best, to say nothing of the fact that you yourself may not be feeling the best.

When broken broaches from either gross carelessness or improper tempering must always be reckoned with. When lack of compensation, uncertain outcome, the feeling that if the worst happens the tooth can be extracted and the patient told that an abscess has formed and extraction is necessary, the patient deluded into the belief and often so, that all has been done that could have been. I say, when these obstacles confront the

average dentist, is it any wonder we feel that the treating of teeth is at best an ignas fatuous?

Of course you may temporize with yourself and patient, may procrastinate, but once you begin to treat an irritated nerve, your troubles are far from ended.

Ask a given number of dentists what medicament they use in the canals, and the whole pharmacopœia will be used. Ascertain, if you please, what is used to fill the canals—if good luck has attended your previous efforts in getting an aseptic condition —and again the range of materials is astounding, with a preference, we will say, for gutta-percha, and why? I have a suspicion it is on account of the ease, yes, a delusion, that the canals can be properly filled with it, that is, if the most favorable cases are undertaken.

But what of the molars, the two-rooted bicuspids and the various malformed teeth?

A recent test challenge by Doctor Magee may serve to enlighten you if you think you are an expert root filler. For under what we believe to be favorable circumstances, *i. e.*, no time limit, nervous patients or inaccessibility to be considered, a given number of teeth were selected upon which to operate. He failed to fill properly seven out of the ten teeth. Either the gutta-percha cones extended beyond the apical foramen or did not reach to it.

All of which shows that this universal method of filling teeth is a deficient one, especially in the molar teeth, for there is where our greatest trouble is for obvious reasons, and as practiced by the average practitioner is a failure from a mechanical standpoint. A wise providence permitting the teeth to remain quiescent by sufferance and fistulous openings. Have you another method? Well and good. May it prove a success and no doubt does average well with our other operations, for the treatment of teeth is an evil necessity with us and should be perfected by all means. Nevertheless a word of caution seems to me apropos and opportune in this age of radicalism and ruthless destruction of nerves.

Try to save more pulps; be guided by the pathological conditions which accompany the functional and structural nature of teeth. Consider well the environments, the age of the patient, whether you have simply irritation, inflammation, congestion, suppuration or hypertrophy.

Many a tooth is conserved by a judicious use of an intermediate after quite severe inflammation has taken place, especially in the young.

It has been my fortune to open up into previously filled teeth, where secondary dentin has formed and been astonished at the heroic efforts of the nerve to remain alive.

The older practitioners could tell you of cases of reparative activity that may seem questionable apparently but nevertheless true to the younger men of our profession, but don't be in too much of a hurry to devitalize teeth even though the natural physiological tendency of the nerve tends to obliteration.

Nature fully intended it to be of use during the life of the tooth and its gradual resorption is only along the line of all physical changes of the human organism.

So let us cherish it for the good it has done, even though the good die young in some offices.

Let its tomb, when all else fails, be a "headstone" truly, whose sarcophagus is contiguous to its esophagus, and not in the show-case on the sidewalk.

REGULAR CONTRIBUTIONS

SOME SUGGESTIONS RELATING TO CROWN AND BRIDGE-WORK.*

BY GRANT MITCHELL, D. D. S., YOUNGSTOWN, O.

The repair of diseased teeth by plugging operations, and the replacement of lost portions and organs by processes now known as crown and bridge-work, is of prehistoric origin.

The drawings here exhibited are copied from Doctor Evans' work on "Artificial Crown and Bridge-Work" (page 147). Fig. 1 illustrates a specimen of ancient Phoenician dentistry. Figs. 2 and 3, that of the Etruscan age, dating about five hundred years B. C. (Figs. 2 and 3 are different views of the same piece.) The specimens from which these illustrations are made, are said to be, respectively, in the museums of the Louvre, Paris, and Corneto, Italy.

It is not the purpose of this paper, in introducing these specimens of antique origin, to revel in a learned disquistion on the evolution of an ancient and honored profession. Nor to skim through the ages when all history is deductive, or conjectural, and by picking up, here and there, odd scraps of ancient dental crudities, piece together a continuous and pleasing story of professional progress. Such a story might be made interesting, but the scarcity of real facts would render it unprofitable.

The evolution of dentistry, as we know it to-day, began in the eighteenth century. And wonderful as the progress seems, in that brief space, it is still more wonderful how little it has progressed.

The mighty lapse of two thousand four hundred years between the crude specimens, shown in the drawings, and similar ones of the present day—Verily, progress moves in an elliptic or-

*Read before the Lake Erie Dental Society, 1904.

bit—ever extending on its outward trend, but sooner or later returning near unto the starting point. And it seems that some few are to be found swinging far out from the rim at every turn. Either well in advance, with notions which time may prove prophetic, or trailing in the dust of times gone by—clinging only to what may, in charity, be called toleration. But P. T. Barnum characterized it differently.

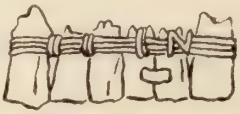


Fig. 1.

Fig. 2.

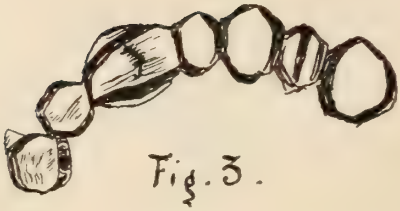


Fig. 3.

And when we consider how actually slow is the progress of destructive agencies in the human mouth, even when aided and encouraged by bad dentistry, we are prepared to admit—if not the literal application of Barnum's characterization—at least, that the woeful lack of perception, on the part of the laity, is the salvation of many a professional reputation. And I fear the unreas-

oning credence given the utterances of our sapient leaders, has exalted many individuals without notably boosting the profession.

The test of a good thing is the amount of abuse it will suffer, and still maintain its place, tranquilly, among the good things. And, in this respect, there is probably nothing which has been more grossly misused than the gold-cap crown. Ill-constructed, ill-adjusted, ill-placed, yet still is the "court of final appeal" in numerous cases.

For a while there raged, in this country, a furious storm of gold crowns, and few were the faces to escape its pitiless pelting. Chorus girls, shop girls, sisters and mothers, and even dentists themselves, were the victims, until the "coon"—that mighty subduer of fashion's convulsions—raised his voice, through teeth of gold, and commanded the storm to abate. And the gold crown resumed its place among things useful, rather than ornamental.

There are three vital points in connection with gold-cap crowns which are collectively essential to the success of an operation, some two of which are usually disregarded, and occasionally all three.

These points are adjustment, contour, and occlusion. Why they are essential to a successful operation is apparent to intelligent men. Why they are neglected is due, first, to the fact that a large proportion of dentists do not make their own crowns. They take miserable wax impressions and send these, without bite, to dental depots, or to mechanical dentists, and have crowns made therefrom. Others resort to "seamless crown" outfits, which more and more afflict the dental markets. And others, still—but charity forbids!

I am prepared to maintain the position, without fear of more than verbal contradiction, that not one man in this audience today can adjust, with anything like tooth-saving accuracy, a gold crown, made in either manner described.

I have stated that the three vital points are *collectively* essential to the success of an operation. The omission of any one means failure, just in proportion to the activity of the destructive tendencies existent in the mouth in which the crown is placed. Even the man who takes the wax impression must know the ultimate result of a crown ill-fitted at the cervix.

Contouring is essential to protect the gums, to prevent shrinkage of the soft parts and exposure of portions of the tooth

that nature aimed to keep covered. A crown should always be so contoured that, in mastication, food is deflected from the sensitive, gingivæ, instead of being forced down upon it as in the case of crowns having perpendicular or pyramidal sides.

Occlusion is a term scarcely broad enough to comprehend all that is implied by the act in this connection. Articulation is a better word. But whichever *term* you employ, be certain that the crown you apply so engages the antagonizing tooth that it not only affords a good masticating surface, but that it avoids any possible tendency to throw the arch out of alignment, or produce peridental trouble, because of ill-judged contact points.

The simplest and most effective dentometer, for taking measurements of roots, is waxed floss-silk. This is tied securely around the cervix, after the manner of an ordinary ligature, and cut opposite the knot. The ends are then straightened out, and the gold cut—three sixty-fourths of an inch longer—to admit of contouring.

The simplest and most effective contouring "press," is the ordinary hawk-bill plier, such as I have here, and known as the Reynolds plier. After the band has been soldered and trimmed to correspond with the festoon of the gums, and cut off to the correct height for the articulation, it is grasped between the beaks of the plier, the shorter beak on the inside, the longer one outside, and with a succession of pinches, and continuous turning of the band, the edges are drawn in, giving the band a spheroidal form, which will easily take the shape of a natural tooth, on readjusting it to the root.

The simplest and most effective method of securing a correct articulation, one wherein the fullest measure of masticating surface is obtained, without danger of peridental troubles, or changes in the arch, resulting from ill-judged contact points, is that suggested and practiced by Dr. T. H. Whiteside, of Youngstown, Ohio, and, as nearly as it can be described in words, is done in the following manner:

After the band has been cut to the proper height, contoured, and fitted to the root, a piece of pure gold plate (24k), 33 gauge, is soldered flat to the occlusal end. Across this flat surface lines are deeply drawn with an instrument to correspond with the fissures in a natural tooth, giving them slightly greater depth where they intersect. Then turning the crown upside down, on a piece

of rubber-coated packing, cusps are *pressed* and *rubbed* outward, by means of a burnisher, to an extent slightly exceeding that which is really desired. The crown is then placed in position on the root and the patient instructed to "chew" it to place. The pure gold being soft, the act of chewing beats down the too prominent points and results in an articulation, with a masticating surface that is both a satisfaction to the patient, and a credit to the dentist. In the event of non-contact at any point, by this method, it is simple to burnish that point out just a little further. The crown is next removed from the root and the cusps reenforced by burnishing an extra bit of 24k gold into them and soldering, using enough solder to fill perfectly any and all space that might exist between the two pieces of gold forming the cusps. After a very little practice with this method, cusps which not only articulate perfectly, but are fashioned far more artistically—according to the capabilities of the operator—than is possible with any of the various stamping methods.

The gold-cap crown was patented in 1873 by Dr. John B. Beers, and should stand as a monument to his eternal memory. But the dental profession, though eager to grab, is prone to forget.

Seven years later, in 1880, Dr. C. M. Richmond devised a combination of the principles of the old dowel, or "pivot tooth," as it was then called, and the cap crown.

There never was a threat of epidemic from this crown, because its construction required skill and patience—two elements which rank far ahead of the "coon" in the prevention of professional hysterics.

The basal principle of this crown—that of adjusting a band to the root, to prevent splitting—is excellent, when indicated by root conditions. The method of applying the principle, however, is incorrect, because the band is here soldered to the crown, thus becoming a part of the crown, and, hence, to a limited extent, part of the strain to which the root is subjected, in crowning. At any rate its function as a *ligature* is not fulfilled and it becomes a mere cant-hook, in principle, lacking only the strength of the cant-hook. And the first slight movement of the crown, the cement attachment is broken, the band stretches and a pocket for the accumulation of destructive agencies is established. And though the gums become turgid and other evidences of pathologic

conditions manifest themselves, the "actually slow progress of destructive agencies in the human mouth, even when aided and encouraged by bad dentistry," is the rescuer of another professional reputation.

Furthermore, bands are not indicated on every root and should be resorted to only when, by reason of long neglect, the dentin has become so softened that its resistance to strain renders crowning a doubtful operation, without some additional support; or on small roots, where the opening made for the dowel pin may weaken the walls; or where fracture already exists. And then the band should be entirely independent, or at most, supported by a dowel pin to which the crown is *cemented*—never soldered. (Figs 4 and 5).

The years succeeding 1880 were prolific of crown inventions. The most prominent of which were the Bonwill, the Buttner, the How, and the Weston. But not until 1885, when the Logan crown made its appearance, did any of them find lasting favor with the dentists. This crown was so great an improvement over its predecessors that it practically superceded all, save the Richmond, and the gold-cap crown.

The apparent ease of its application made it at once a general favorite. Though it, too, has demonstrated the tendency on the part of dentists to run wild over good things, in that teeth which could better have been saved by fillings were sacrificed on the altar of the Logan. This sacrifice, however, would appear less costly in many instances had more care and judgment been exercised in the mounting.

A curious characteristic of the dental profession is the slighting manner in which the apparently easy-to-manipulate mater-

ials are handled. Amalgams and cements, carelessly mixed, are dabbed into cavities partially prepared; crowns are slapped onto roots imperfectly ground, with the result that the proportion of failures is so excessively beyond what it should be that the unreasoning ones are fairly warranted in branding these indispensable adjuncts "inferior," and exalting themselves in their own little minds with the intimation that they never use these things.

A writer in a recent number of the *Dental Brief*, thus spake: "A great majority of dentists are accustomed to the use of ready-made crowns, such as the Logan and Davis, *and an immediate discontinuance of their use is not to be expected.*" A sage remark, indeed, and so brimful of truth that its subtle inference is fairly crushed 'neath the weight. Had this gentleman desired to pose as a writer of "the whole truth," instead of a mere performer of "more ambitious operations," he should either have omitted the words I have italicized, or stated that it is neither to be expected, nor is it to be desired, that their use be discontinued.

That comparatively few failures, resulting for the most part from ignorant or careless manipulation, should brand these splendid crowns as fit only for the present use of "a great majority," is as absurd an inference as to class amalgams and cements likewise; or that the "great majority" should libel the "more ambitious operations" of Richmond, and other made-to-order crowns, affected by the self-anointed—the elect—because the inferior "great majority" are all too frequently confronted by the harassments of faceless Richmonds, and other "more ambitious operations," barricading the roots.

The Richmond crown is here to stay yet a while longer, despite its weakness. And so are the Logan and Davis, despite theirs. But the "more ambitious operation" of making to order vastly inferior, all-porcelain crowns, is destined to take rank with the "Dent a Tenon," of Fauchard. And that, too, while the use of ready-made crowns and "the great majority" are both increasing.

The latest real acquisition in the crown world is that devised by our worthy brother, Dr. T. H. Whiteside. This crown seems to present more points to recommend it than any other.

The detached pin, which marked in the Davis crown a step

as far in advance of the Logan as did the Logan's improvements over its predecessors, is in the Whiteside crown manifested to its greatest advantage, in that it maintains the maximum of strength with the minimum of time and labor required in mounting it.

The relation of the mortise to the rest of the crown not only adds tremendously to its strength but lends it to a greater variety of applications than any other crown. It may be used as a simple porcelain crown, mounted with oxyphosphate, gutta-percha, or amalgam; or it can be used after the manner of a Richmond crown, fashioned on correct mechanical principles, in that the band is wholly independent of the crown, thus fulfilling the true function of a ligature without disturbance, even though the crown itself be battered off.

A further advantage over the Richmond is apparent in the event of fracture. A broken Richmond, if not a serious problem, is at least a mighty discouragement. A broken Whiteside, with the Richmond mounting, is simplicity simplified. Merely put another crown on, without attempting to disturb the fixtures in the root.

The applicability of the Whiteside crown to bridge-work has solved several vexed problems. As the teeth are not exposed to the heat of soldering, they are neither checked, nor have they their temper destroyed, so that they are likely to check in use.

Instead of being weakened at the point where greatest strength is required, as is the case with all adjustable bridge teeth through the insertion of metallic attachments, the inspiration which placed the mortise engagement at the labial face of this crown, removed an embarassing liability to break, and still preserved the facility of repair in the event that the unexpected happened.

The shapes of the Whiteside crown are original as regards the base. Most makes of porcelain crowns have their bases so fashioned that it is "easy to grind them" to a sort of adaptation with the root. This is a thoughtful provision on the part of the designers of these crowns.

But the designer of the Whiteside crown was even more thoughtful in providing a base to this crown that is not built on for the sole purpose of grinding it off.

TREATMENT OF PUTRESCENT PULPS AND ABSCESSES.*

BY JOHN MISTR, D. D. S., CLEVELAND, OHIO.

In studying my subject I find that no operation in dentistry is so diversified as the treatment of pulp canals. Every man has a reason for the faith that is within him, and every dentist will undertake to explain and defend his methods of treatment. But, nevertheless, this small cavity that plays so important a part in the comfort and welfare of the tooth, has always been a victim of ignorance and experiments.

Before any intelligent treatment can be made we mustknow the physical characteristics of a pulpless tooth, what the tubular contents are. We know that the dentinal structure of a pulpless tooth is permeated with a combination of oils, fats and animal tissues, resulting from food particles and their decompositions.

There are, besides these, probably always present in the decomposing contents of the pulp canals and tubuli, sulphur compounds from the decomposition of albuminous matters. These different materials claim our careful consideration in the selection of the proper compound to render the diseased tooth thoroughly aseptic.

It should be a non-coagulent, as diffused medication is eminently essential, and the diffusibility is not attainable when coagulants of either egg albumen or serum albumen are employed. The diffusibility of the essential oils cannot be disputed; they are all powerful in the destruction of septic and infectious matter, and the non-irritating effects of these oils and their gentle, stimulating action make them especially valuable in these putrescent and inflamed conditions.

The non-coagulant essential oils most used by the writer are eucalyptol, cajeput, clove, and cassia. The oils of eucalyptol and cajeput are practically colorless, so they may be used in the anterior teeth without fear of discoloration.

An important factor in these putrescent conditions is the

*Read before the Cleveland City Dental Society.

use of every antiseptic precaution, saliva must be excluded from start to finish.

Having gained free access to the pulp canal, wash out with three per cent. pyrozone. I do not attempt to remove all the contents of the canal at the first treatment. After disinfecting, for a few days, there is less danger of forcing septic matter through the foramen. Wash out the canal or canals, as the case may be, with strands of cotton on broach saturated with the above-named solution, without taking the chance of forcible pumping, for I think we sometimes lose sight of the fact that in the use of the cotton-covered broach, the force exerted is often much greater than we imagine; it is very easy to force some of the septic matter through the foramen, hence it is not advisable to use enough cotton on broach to make a tight-fitting piston.

After thoroughly drying out the canal or canals, pump in the eucalyptol or cajeput if anterior teeth, and if in the posterior teeth, I prefer oil of cloves or cassia; and insert very loosely a little cotton saturated with one of these oils, seal with temporary stopping, and dismiss the patient for eight or ten days. At that time, after washing again with three per cent, pyrozone, the canals will usually be in good condition for filling.

Before filling, however, I wipe out the canals with fifty per cent. solution of sulphuric acid, according to Dr. Callahan's method, then neutralize with bicarbonate of soda, so as to be sure that they are clean and aseptic. If there be any periosteal inflammation present at the first treatment, I perforate the stopping in two places, paint the gums with aconite and iodine, equal parts, and dismiss the patient for three or four days and at the second sitting treat as above described, without perforating the stopping, and again dismissing the patient for eight or ten days.

In treating where there is a blind abscess, drain as thoroughly as possible, wash out with pyrozone, and after again draining and drying, pump in aromatic sulphuric acid, and inserting a very loosely-placed cotton dressing saturated with one of the essential oils, not closing the foramen, seal

with temporary stopping, perforate well and paint the gums with aconite and iodine equal parts. When seen, a few days later, if inflammation has not subsided, and there is pus still present, the treatment would be repeated as just described.

Should there be no puss or inflammation present, treat as described when there was not the complication of a blind abscess.

If the abscess has a fistulous opening, wash it through with pyrozone and then pump in aromatic sulphuric acid or some of the essential oils, until it appears at the opening, seal the canal and dismiss patient for three or four days, then repeat the treatment. As a rule, after the third treatment, the abscess is cured and canal ready for filling.

Now, a few words about filling the canals. The canals may be divided into three usual grades:

First, those which are accessible, large, easily entered and which can be explored to their ends without difficulty.

Second, those that are yet accessible, but which are small, not easily entered and which it is always difficult and sometimes impossible to satisfactorily explore and

Third, those which are much less accessible, almost impossible to enter and absolutely impossible to explore for any distance, either on account of fineness or of tortuosity. For the filling of the most difficult canals, I should suggest the most searching, soothing and permanently antiseptic medicaments, such as oil of cloves and cassia, or where paste can be introduced, I have good success with the following:

Iodoform	dr. i.
Bismuth subnitrate	dr. ii.
Acidi corbolici	gtt. vi.
Mucilago acaciæ	add q. s. paste.
Gylcerine	

But for the filling of the accessible and easily entered canals, it is better to use chloro-percha and gutta-percha points or oxychloride, for the reason that a sufficiency of antiseptic can thus be placed and that a better preventive to ingress of fluids can be provided in that way.

SERIOUS RESULTS FOLLOWING DENTAL INFECTION.*

BY C. A. HAMANN, M. D., CLEVELAND, OHIO.

Professor of Anatomy and Oral Surgery, Dental Department, Western Reserve University.

These cases are reported in order to illustrate some of the possibilities resulting from an infection originating in or about the teeth.

Case I. Mr. S. referred to me by Dr. Price, of Kent. The patient, a somewhat delicate man, aged thirty-six years, had been the subject of "nervous prostration" so-called for several years. About three weeks before coming under observation he had had the second lower bicuspid drawn; this tooth had previously been filled. Before the extraction of the tooth there was seemingly no trouble with the jaw. After the extraction, the jaw became swollen and an abscess burst into the mouth, opposite the first bicuspid; this tooth and the lateral incisor were found to be loosened. The inferior maxilla was considerably thickened from the molar teeth of one side to those of the other; it was tender upon pressure, there was an opening through the skin on the right side, through which with a probe one could feel exposed bone; exposed bone could also be felt through openings in the mucous membrane. His tongue was coated, the breath was very foul, digestion was impaired, his temperature had been ranging between 99 and 101. In short he was suffering from a mild sepsis.

The history of the case, the presence of discharging sinuses through which necrosed bone could be felt, and particularly the thickening of the body of the lower jaw, led me to diagnose asteomyelitis of that bone. Accordingly the bone was exposed by a free incision on the right side (where the process had begun). The outer table of the mandible was necrotic—several loose pieces of bone were removed. The canal for the inferior dental vessels and nerve was full of pus; it was laid open for a distance of an inch and a half. On the left

*Read before the Cleveland City Dental Society.

side the outer surface of the bone was normal and the canal was not opened.

After this he did not improve. The left side of the face became swollen. A parotid abscess formed. I operated upon him twice subsequently laying open the inferior dental canal from end to end, it was full of pus. At the end of four and one-half or five weeks his temperature had become nearly normal and the discharge of pus had practically ceased, so that it was hoped that he was now out of danger. He, however, began to complain of numbness and weakness of his right arm. His speech began to get thick, he had difficulty in swallowing, and his mental condition was not clear. The paralysis became more marked, involving also the lower extremity. He lapsed into a state of stupor, developed convulsions, and died six weeks after the first operation. No autopsy. The cause of death evidently was a metastatic cerebral abscess.

We had in this patient, then, an osteomyelitis of the lower jaw due to a carious tooth, which resulted fatally from cerebral infection. Osteomyelitis of the jaw is, on the whole, a rare affection. Writers seem to differ as to whether the carious tooth is the source of infection or whether infection occurs after extraction of the tooth. Certainly it would seem that the disease ought to be more common when the frequency of caries of the teeth is considered, and when one thinks of the immense number of extractions, which are often done without precautions as to surgical cleanliness. Traumatism, metastasis and hæmogenic infection may also cause the disease. Usually the entire bone, that is to say marrow, osseous tissue and periosteum are involved, so that it is better to use the term ostitis It may be either *circumscribed*, or as in the above case, diffuse. The latter is of course the more serious—indeed is usually fatal—due to sepis, or metastatic abscesses or sinus thrombosis. The lower jaw is more often involved than the upper. The bone is thickened—tender upon pressure—the teeth are loosened—and bathed in pus. The face is swollen; the constitutional symptoms are those of sepsis, which it is needless to mention.

Stress is to be laid upon the loosening of the teeth as a diagnostic sign.

The treatment is that of osteomyelitis in general; free incisions, thorough drainage and the removal of sequestra. In cases that recover, an unpleasant sequel is often seen in the shape of cicatricial closure of the jaw, from the infiltration of the muscles, particularly the masseter.

Case II. A. K., age thirty-five, was admitted to Charity Hospital on June 14, 1902. He had a diffuse submaxillary swelling, both sides being indurated and reddened. He had a high temperature (ranging from 100° to 104°). There was extensive *pyorrhea alveolaris*—all of the teeth being involved—one could force pus from the sockets. The source of infection evidently was this suppurative process about the teeth. A couple of incisions were made in the neck but no pus was found. Subsequently an abscess formed over the left parotid. In the pus were found streptococci. His temperature continued to be elevated.

On June 26, *i. e.*, about two weeks after the beginning of his illness, it was noted that his left eye was protruding. On the next day there was exophthalmos of the right side, also chemosis. It was then certain that he had thrombosis of both cavernous sinuses. Delirium soon set in. He had repeated chills and died on June 30. An autopsy, made by Dr. Parker, revealed the presence of purulent thrombi in both cavernous sinuses, also in the circular and transverse sinuses and in both ophthalmic veins. There was pus in the right orbit and also in the subarachnoid space at the base of the brain.

To summarize; in this case there was a suppurative affection of the sockets of the teeth, resulting in submaxillary and parotid infection, followed by septic thrombosis of the cavernous sinuses and death.

Case III, which I will not report in detail, was very similar to the above. The patient was seen in consultation. He had thrombosis of both cavernous sinuses, due to an infectious process extending from suppuration about the teeth, pyorrhœa alveolaris.

What is the path that the infectious process follows in these cases of extension from the teeth to the cavernous sinus? The veins which return the blood from the teeth pass to the pterygoid plexus, which is situated about the pterygoid muscles, and in the fat of the cheek. This plexus communicates with the cavernous sinus by means of small veins which pass through the foramen vesalii, foramen lacerum medium, foramen ovale and along the internal carotid artery; in addition to this there are communications between the plexus and the inferior ophthalmic vein through the spheno-maxillary fissure; the ophthalmic vein empties into the cavernous sinus.

The facial vein also communicates with the pterygoid plexus by means of the deep facial vein and with the ophthalmic vein at the inner angle of the orbit.

Given then a suppurative process about the teeth, such as pyorrhœa alveolaris, an alveolar abscess, or indeed any septic process about the jaws, or face, it is easy to see how extension to the sinus may occur. If the sinus is thrombosed, the ophthalmic vein of course cannot empty itself and consequently the blood is retained in the orbit; œdema, and infiltration of the loose orbital tissue, with serum and perhaps pus, cause the eyeball to be protruded, and chemosis to appear. Furthermore, inasmuch as the two cavernous sinuses communicate by means of the circular and transverse sinuses, the opposite sinus from the one first involved becomes almost necessarily thrombosed, and the second eyeball is pushed out. This consecutive involvement of the eyeballs *first one and in 24 hours or more the other is pathognomonic of cavernous sinus thrombosis.*

It may be well to mention the ocular changes produced by cavernous sinus thrombosis. The most striking phenomenon of course is the protrusion of the eyeball. The lids are swollen, bluish and œdematous; there is chemosis. The pupil is dilated and immovable, and the motion of the eyeball is limited, from pressure upon the motor oculi, which lies on the outer side of the sinus. Optic neuritis, photophobia and diminution of visual acuity may be present.

The first case of thrombosis of this sinus upon record was

reported by Castleman and Ducrest in 1840 (Recherches sur les absces multiples, Paris, 1840, pp. 138).

Recently Dwight and Germain (Boston Medical and Surgical Journal, Vol. CXLVI., No. 18, pp. 456) have collected one hundred and seventy-eight cases and add four of their own.

In going over the literature of this subject I have found the following causes of the affection mentioned, in addition to suppurative processes about the teeth and extraction of these organs; otitis media, with extension to the mastoid process and adjacent sinuses, caries of the sphenoid and ethmoid bones and disease of their sinuses, facial carbuncles, erysipelas and other septic processes in the area drained by the facial vein; infection of the orbital connective tissue, sarcoma of the orbit, necrosis of the cranial surface of occipital bone.

The diagnosis of the condition is easy. Perhaps the only processes that could be mistaken for it are orbital cellulitis or abscess, tenonitis and panophthalmitis. All of these may produce practically the same signs, and indeed may be followed by sinus thrombosis. In differentiating between these conditions the main reliance must be placed on the cause of the affection. When there is an inflammatory process in the orbit, there will be found some local cause, as an injury. The appearance of exophthalmos of the opposite side is, as previously stated pathognomonic of sinus thrombosis. Cavernous sinus thrombosis is practically always fatal—*i. e.,* septic thrombosis is.

Can anything be done for it?

It would naturally occur to one familiar with the Hartley-Krause operation for the removal of the gasserain ganglion to resort to this method for the exposure of the cavernous sinus —to open it—remove the clot and pack the cavity.

I have found four cases in which this was done, either by the Hartley-Krause method or analogous procedures.

Hartley in one case removed fragments of a melano-sarcoma from the sinus, the patient lived about three months.

Dwight reports a case which was unsuccessful.

Voss records a case in which he exposed the sinus by Lexer's method of reaching the gasserian ganglion (temporary resection of the zygoma). The patient died.

He suggests that, if the origin of the thrombosis is in the orbit, Kroenlein's osteoplastic resection of the walls of the orbit be combined with this method.

Bircher in 1893 recorded a case, the only successful one, of septic thrombosis in which he opened the skull above the external meatus, removed the petrous portion of the temporal bone and then evacuated the clot.

There is then some chance of a successful operation, though it might be necessary to open both sinuses.

Fatal sepsis following the extraction of teeth occasionally occurs. Several years ago I saw, in consultation with Dr. Wm. E. Bruner, a case of this sort. There had been an alveolar abscess and an upper molar was extracted. The patient developed a thrombosis of the cavernous sinus, the course of the disease being in all respects similar to that of the one previously described.

That the neglect of the now well-recognized precautions in regard to surgical cleanliness is responsible for some of these deaths, cannot be doubted. It is needless and would be presumptuous on my part to insist before this body of dentists, on the importance of antisepsis and asepsis in dental operations. Dentistry has shared with general surgery the vast benefits resulting from the carrying out of the principles inculcated by the immortal Lister. It is not possible in the oral cavity, however, to carry out, to perfection, the procedures which are practicable elsewhere inasmuch as thorough sterilization is not feasible. Furthermore, septic absorption, and the extension of the infectious process have already occurred before the patient seeks relief.

In dental manipulations it occasionally happens that small punctured wounds of the lip or cheek are inflicted by the slipping of an instrument. In ninety-nine out of a hundred such accidents there is no ill result, but once in a while infection takes place, and there is extensive swelling and œdema of the face as I saw in one instance.

Infection through carious teeth is a very common cause of tuberculosis of the cervical lymph glands. Statistics showing this have been collected. This affection is, as you know, most common in childhood. The submaxillary lymph glands receive the lymph from the teeth and if cavities are present in the teeth, they are very apt to contain tubercle bacilli as well as other germs. Medical men very commonly overlook the teeth as infection atria, and I am confident that much could be done in preventing glandular enlargements, by attention to the teeth of children.

The presence of pus in the alveoli or gums may lead to general septicæmia. In that very common affection, Rigg's disease, or pyorrhœa alveolaris there may be a chronic form of blood poisoning—the source of which is not recognized by the physician. Some of the cases of so-called crypto-genetic septico-pyæmia are due to dental infection. It has always seemed strange to me how persons escape septicæmia and why we do not see more instances, when we consider the large numbers of persons who have these foci of suppuration. In dispensary practice one is impressed with the filthy condition of the mouths of a great many, I might say the majority of the patients.

EXTIRPATION OF THE PULP UNDER PRESSURE ANESTHESIA, INCLUDING A STUDY OF AFTER RESULTS.*

BY RODRIGUES OTTOLENGUI, M. D. S., NEW YORK.

As an excuse for the presentation of this paper, let me state that it has seemed to me noteworthy that the advocates of pulp removal under pressure anesthesia have counted their cases as "successful" when anesthesia has been accomplished, and painless removal of the pulp has thus been made possible. Unpleasant after results (to use a mild term) have apparently not been counted at all, or at least they have not been recounted. I have met with so many that it has seemed to me a theme worthy of serious study.

*Read before the Northern Ohio Dental Society, June, 1904.

Again, the advocates of the method, when asked to explain failure, by which I mean failure to produce insensibility, have replied, "You have not properly applied the method." This is far from satisfactory to the questioner who has met failure of this character. Nor is it a scientific response to a perfectly legitimate query; neither is it a true statement, for there are cases in which no method of applying pressure anesthesia will cause insensibility, as we shall see.

Without further preliminary, let me approach my subject direct, dealing with it from two aspects; first, the application of pressure anesthesia for painless pulp removal; second, a consideration of after results.

From accurate histories of all the cases that have passed through my hands during the past year, I classify the conditions prevailing at the time of resorting to pulp removal, under four distinct headings, each with a prognosis and series of resulting phenomena constant to its class.

CLASS I.

Freshly exposed pulp otherwise in a healthy condition. The prognosis is favorable throughout. Anesthesia should be perfect after a three minute application. Hemorrhage inconsiderable and readily controlled. Success almost absolutely certain in deciduous teeth. Exceptions; anemic patients; persons having an antipathetic idiosyncrasy against cocaine; cavities so situated that oral fluids cannot be positively excluded

EXAMPLES FROM PRACTICE.

Case 1.—Patient, woman aged forty. First upper molar aching badly. Applied dam, removed leathery decay; causing fresh exposure of pulp with free bleeding. Pressure anesthesia attempted, using anhydrous crystals of cocaine freshly dissolved in adrenalin, practically a saturate solution. Application of pressure three minutes; pulp removed entire from three canals, absolutely painlessly; hemorrhage slight. Dressed with antiseptic which on removal two days later showed no evidence of stains from secondary hemorrhage. Canals filled. Subsequent history —perfect comfort.

Case 2.—Second temporary molar of a child aged seven. Dam applied. Pressure anesthesia for three minutes; pulp re-

moved entire, and painlessly. Hemorrhage slight. No after trouble.

Comment.—Of cases like Case 1, I have had a great number, success being as good in multirooted teeth as in single-rooted teeth. Still I have also had exceptions, as will be cited. Of cases like Case 2, I have had only five, but they have been all so utterly satisfactory that I do not hesitate to say that pressure anesthesia solves the problem of an aching exposed pulp in a temporary tooth where the tooth can be isolated with the dam. Where the gum tissue between the teeth is hypersensitive, as it commonly is, one application of cocaine is made prior to applyng the dam, by which means the gum tissue is rendered insensible. In a sixth case where the intractibility of the young patient made it unwise, if not impossible, to apply the dam, equally good success was attained, a large piece of unvulcanized rubber being utilized and the pressure applied with the ball of the thumb, thus in a measure insuring the restriction of the drug to the cavity.

Case 3.—Patient, a young woman aged twenty. Anemic. Lower second bicuspid, distal cavity. Pulp freshly exposed and apparently otherwise healthy. Application as before, and painless removal accomplished. Hemorrhage profuse, but seemingly controlled after five minutes. Patient dismissed with antiseptic dressing and cavity sealed. Returned in four hours, suffering intensely. Removal of dressing followed by profuse secondary hemorrhage; pain subsiding with the release of the blood. Bleeding controlled after fifteen minutes, and canal dressed with aborbent cotton, dry, covered with seal. Patient seen next day. Reported no discomfort. Dressing removed and found saturated with blood. This and similar cases establishes the fact that considerable secondary hemorrhage may follow pulp removal under pressure anesthesia and that it is a constant danger which should not be overlooked. It also establishes the value of a dry dressing, one that is not steeped in an oil. The dry dressing readily absorbs blood and may inhibit the formation of a clot beyond the apex by drawing the blood within the canal. I look upon this as a valuable clinical procedure. The dressing may be rendered aseptic with some antiseptic powder, or by placing a second bit of cotton slightly moistened with an antiseptic, between the canal dressing and the outer seal, since it is the ingress of infectious material through the oral cavity that we are endeavoring to prevent.

Case 4.—Patient, a man aged thirty-two. Tooth, lower third molar. Occlusal cavity, pulp exposed, but apparently not otherwise affected. Isolated with rubber dam, and six applications of cocaine made, each of three minutes duration. Arsenic then used, and repeated at second sitting before pulp could be removed. No evidences of calcification. This patient is one in which there is undoubtedly an idiosyncratic antipathy to cocaine. Some years ago, in treating the first molar on same side, I essayed cocaine cataphoretically. Current was sustained for eighteen minutes, without anesthetic effect, but patient then evinced a numbness almost amounting to temporary paralysis of side of the neck and arm, which curiously enough endured for exactly eighteen minutes. I record this case as of interest, but while I have used this experience as a basis for one of the exceptions under my rule for this class, I must also state that it is a unique case. Still I deem it worthy of mention, because idiosyncrasies against special drugs are common in the experiences of physicians, some individuals, for example, tolerating tremendous doses of morphine, while others exhibit toxic symptoms if only minute doses are administered.

Case 5.—Introduced as an example of the exception noted, viz.: where oral fluids cannot be positively excluded. This was in the lower third molar of a man thirty years of age. The cavity involved the greater portion of the buccal wall, and part of the distal, so that it was almost impossible to apply the dam, there being more or less leakage under the clamp which was but insecurely held. Cocaine pressure failed, probably because of this leakage, and arsenic was applied. Pulp was removed at second sitting, but infection supervened and the difficulty of completely sterilizing the canals made it finally necessary to extract.

CLASS 2.

Pulps aching, in teeth which are already filled, and found to be exposed, or nearly so, upon removal of filling. The conditions usually prevailing are sufficiently unfavorable to render prognosis doubtful, and more than ordinary precautions advisable.

This sort of teeth are here placed in a class apart, because certain dangers are present which, if recognized at the outset, renders the treatment more scientifically exact and the outcome more certain to be favorable. A study of the class shows that

the filling in the tooth must necessarily have been intended either as permanent or as probational. If the former, it is probably of gold or amalgam; if the latter, it is usually oxyphosphate. If a metallic filling be present, the history of the case will reveal whether the pulp affection is due to failure on the part of the dentist to remove all of the carious material, in which case caries will have been slowly progressive; or whether (where, for example, the filling has long been in place) the pulp has been injured since the filling. But in either case we have a morbid tissue to deal with. This is more certain to be true where the filling is probational in character. If the previous attendant has filled with oxyphosphate, it is evidence that the condition of the pulp caused him to doubt the advisability of using a metallic filling. In any case then, a pulp aching, and covered by a filling, present us a morbid tissue, and prognosis will depend upon the conditions found upon removal of the filling.

If the filling was of a permanent character and had long been in place, it may be promised with considerable certainty that the too close proximity of the metal, or some outward exciting agent, has caused a deposition of calcific material in the pulp, and this will place the case under Class 3, to be described hereafter. If the pulp is suffering from a traumatism, it is possible that a ruptured vessel has brought about the pain, and prognosis should be as in Class 1, except that there will be more likelihood of hemorrhage disturbances. Where the filling was probational in character, and has been in place but few weeks, the probability is that caries has been progressive until pulp irritation has ensued. In all these cases it is important to carefully note the first exudation from the pulp as it is uncovered. If a drop of pus should escape it shows that infection is already present. This being true, for reasons that will later be explained, pressure anesthesia should never be attempted at the first sitting; instead a dressing which will be both sedative and antiseptic in character should be applied. Ceylon cinnamon oil may be relied on in such conditions. Usually the escape of pus, and the slight hemorrhage, alleviates the suffering any way, and the main purpose of treating antiseptically is to avoid the danger of forcing septic material through the apex, thus infecting the tissues in that region. Where there is no pus present, and no calcification, prognosis should be favorable throughout. As an evidence of the need of caution in these cases,

and in support of my advice to treat antiseptically for at least twenty-four hours prior to using pressure anesthesia, I will cite the following cases:

Case 6.—Patient presented with aching second lower bicuspid, a woman aged about thirty. Tooth filled with oxyphosphate, which had been in place for two months, during all of which time the patient declared that the tooth had "grumbled." As the last bit of the oxyphosphate was forced away from the pulpal wall, the tiniest drop of pus escaped which was quickly washed away by the free hemorrhage which ensued. Not recognizing the clinical value of the evidence of pus, and therefore not considering it essential to use a sterilizing agent in a cavity from which a tight filling had just been removed, I proceeded directly with my cocaine application, which was entirely successful, the pulp being painlessly removed entire after three minutes. A profuse hemorrhage ensued which was finally controlled with hydrogen peroxide and a dressing of cinnamon oil placed in the canal. Patient was dismissed for two days, but returned in one, reporting pain and tenderness. Dressing renewed, followed by a slight secondary hemorrhage, and a new dressing placed. Twenty-four hours later I was called by the patient on the telephone and she reported increasing pain. I recommended an eighth of morphine and a visit to me on the next day. The morphine acted well, but the symptoms were progressive, so that on the next afternoon I was obliged to visit the patient at her house and lance a well-developed abscess.

This sort of case will be discussed more fully in the latter part of this paper, so I will merely say here that in my opinion in this case the application of pressure anesthesia carried along the blood tracts of the pulp septic germs, forcing them beyond the apex, whereupon the removal of the pulp tissue, they found pabulum in the secondary hemorrhage which afforded an environment favorable to bacterial propagation. I expect to be asked why I did not use formalin, as has been recommended, prior to resorting to the cocaine. I did not at that time deem it requisite, but on this point the following case will throw some light.

Case 7.—Patient, a young woman about twenty. Lower second molar which had been filled with oxyphosphate for about three years. This filling had been undermined by caries, and pulp

was found to be exposed. The carious matter was removed and a portion of the pulp easily cut away, showing that it had become affected. Later, however, a painful area was reached and cocaine became necessary. Formalin was used freely in the cavity and on the pulp for full five minutes, after which the cocaine was applied and the pulps from both canals painlessly removed. Profuse hemorrhage followed, which was allowed to drain thoroughly until apparently ceased, after which canals were cleansed and dried and an antiseptic dressing applied I confidently expected a happy outcome, yet this tooth persistedly continued "uncomfortable" for several days. Believing that perhaps I would get better results by filling the roots, I thoroughly sterilized the canals by the Schrier method, as is my invariable custom, and filled the canals. By the next day the tooth was so sore that I was obliged to admit the patient to a sitting out of turn, and was forced to remove the root fillings. The canals were again sterilized and dressed with an etherial solution of iodoform, my usual salvation in such emergencies, and it was three weeks before I dared to fill the canals a second time. There was no abscess in the true sense of the word, but my explanation is that septic germs were carried beyond the apex and an infected blood clot was present, the tooth giving trouble until this had become absorbed. Apparently the application of formalin (forty per cent) for five minutes did not inhibit the germs which were probably present in the pulp itself. If formalin did not destroy septic germs in this case, why should we expect to do so in other cases?

CLASS 3.

Calcific material present. Full anesthesia by pressure is rarely obtainable. This is true in all varieties of calcification, whether it be nodules, or deposition of secondary dentine. Hemorrhage seems to be less probable and is usually more easily controlled, yet in one or two cases I have noted profuse hemorrhage, both primary and secondary.

Case 8. Central incisor, of a man, worn down by attrition. Desiring to apply a crown, I drilled as far as I could toward the pulp, and the sensitiveness becoming unbearable, I resorted to cocaine. Seven applications of three minutes each proved absolutely ineffectual. I then applied arsenic, and at the next sitting was able to drill through the secondary dentine, fully exposing

the pulp, but then the sensitiveness again obtained. It is of interest to record that another attempt with cocaine was unsuccessful, which has been my invariable experience after arsenic has once been applied. A second arsenical application therefore became necessary.

Case 9.—Patient, a woman aged about forty-five. Lower cuspid pulp exposed under ordinary caries. Three appications of cocaine having failed to relieve the sensitiveness, diagnosed pulp-stones, and despite the pain, burred away the upper portion of the pulp. Another application of cocaine enabled me to remove the pulp, but with considerable pain to the patient. This specimen was immediately examined under the microscope and the upper part found filled with pulp-stones, one of great magnitude. Some evidences of cocaine was found throughout the uncalcified part of the pulp which accounts for the partial anesthesia. The fact that cocaine may be detected with the microscope will receive fuller discussion later in this paper.

CLASS 4.

This includes so-called sound teeth, in pyorrhea mouths, where pulp removal is resorted to as a measure of treatment. Three obstacles to success are to be encountered. First, there is great probability of pulp calcification; second, hemorrhage is a common sequence; and third and most important, the socket being already in an infected condition, apical abscess is a not improbable sequence.

Case 10.—Patient, a man in middle life, with considerable pyorrhea present and pus conditions bad in spite of treatment. An upper molar being peculiarly sensitive, pulp removal was decided on. Pressure anesthesia proved perfectly successful so far as painless removal was concerned, there being no calcification present. Hemorrhage was profuse and not easily controlled. In spite of antiseptic precautions, apical abscess ensued, causing considerable disturbance until a sinus connecting with the pyorrheal pocket was established.

Case 11.—Patient, a man of forty-five, presenting with upper molar having palatal root badly denuded, and extremely sensitive, practically amounting to continuous pain. Slight pyorrheal conditions present in the mouth and about this particular tooth. The

roots were cleansed as thoroughly as possible prior to treatment, and the pulp was removed under cocaine anesthesia, which, however, was far from painless, there being pulp nodules throughout all three branches of the pulp, and separate applications of cocaine needed for each root. In this case (as stated under Class 3), there was very little hemorrhage and after one antiseptic dressing and thorough root sterilization the three canals were filled. Within a week an abscess formed over the anterior buccal root, and root amputation was required, after which a perfect recovery was made. Was it possible to thoroughly open this root?

The deductions to be made from the above would seem to be, either that I have been most unskillful, or else that pulp removal under pressure anesthesia is a more complex operation than would be imagined, by one without personal experience, who would judge solely by the recent contributions to current literature. In the second part of my paper, which I now approach, I shall endeavor to account to some extent for the troubles which I have experienced.

To those who have not found pressure anesthesia all that has been promised, and I have little doubt that I am not alone in my adverse experiences, let me call attention to one important fact. We have all, for years, been removing pulps after an arsenical application. In resorting to the cocaine method, I think we have overlooked an important clinical difference in the two procedures. A pulp dressed with arsenic reaches us in an altered condition, too well understood for it to be needful here to discuss it. Removal under cocaine is practically an anesthetic surgical operation, and we should remember that all phenomena which may occur elsewhere in the body are equally to be combatted in this region, except, of course, such as may be purely local in character. *The first consideration is the rupture of the blood vessels.* Without stopping to discuss the exact distribution, whether from a single vessel entering at the foramen or whether from one or more which traverse or anastamose with those of the pericementum, suffice it to state, what we all admit, that these vessels do pass out through the foramen. The removal of the pulp under cocaine anesthesia presents the common phenomenon of a bloodless tissue, followed by an apparent copious flow of blood. This, however, is not a true hemorrhage. *The vessels being torn asunder and the pulp forcibly drawn out,* the blood of the pulp itself is

squeezed out and remains in the canal. This blood is removed with tampons of absorbent cotten or bibulous paper, and the canal further cleansed with the syringe. If at this period the canal is seen to slowly fill again with blood, what I would term a true hemorrhage is present. A torn vessel is bleeding. Under exactly similar conditions anywhere else in the body, what would the surgeon do? If possible he would ligate the stump of the bleeder, or if very small he might twist it. Neither procedure is possible in this position. The dentist usually undertakes to control this hemorrhage with some hemostatic. Is this good surgery? Can you imagine a surgeon doing a major operation, closing his wound and leaving within a vessel which has bled and which has been stopped solely by the application of a drug? I think the surgeons would feel safer to not fully close his wound, and to establish drainage in some fashion. Why? Because he realizes that blood that is staunched in this manner (as in the ordinary nose-bleed for example, stopped by plugging with a styptic) may start to flow again. The force with which the blood flows may be sufficient to remove the clot formed at the torn end of the vessel in which case the bleeding continues until another clot is formed. This is known as a secondary hemorrhage ,and I beg to assure my hearers that it is a never-to-be-forgotten possibility where a pulp is removed alive, whether under cocaine or any other anesthetic.

Wherein lies the danger from this secondary hemorrhage? A clot is formed. *Now this clot must be cared for.* If it escape infection it will be absorbed, but even without true infection we may have distention of the parts causing pain, and we may have a true inflammation. Infection may reach this clot in several ways. In mouths affected by pyorrhea, especially where there is a pocket, on the particular tooth under treatment, it is conceivable that the pus germs may readily migrate through the slight barrier of bone between the bottom of the pyorrhea pocket and the region about the apex where the blood clot lies. Again, we are told that there may be germs within the blood tracts which do no harm until emptied out upon a favorable medium when propogation and consequent pus formation is a necessary sequence. The germs then may be in the clot itself, and as soon as the blood leaves the vessel, these germs are freed from the inhibiting action of the leucocytes. Lastly, and this is a point on which I make great stress, the germs

may have been in the cavity and may have been carried into and through the pulp, with the cocaine solution, and this brings me to my promised explanation of the statement that the cocaine could be detected with the microscope.

I relate the following with some hesitation, because I am not positively assured that I am right, not having had sufficient material with which to make my belief assured conviction and beyond dispute. However, I will relate my experience, reserving the right to withdraw my present views after further study of the facts.

For the past two months it has been my habit to examine with the miscroscope all pulps removed under cocaine. In the first specimen so examined, it seemed to me that I could plainly see the crystals of cocaine, and they seemed to be deposited along the blood tracts If this were true, it became at once manifest that the anesthesia is not a physiological result of mere contact with the cocaine, but that the cocaine, in solution is actually taken into the blood vessels of the pulp itself. By allowing the pulp to dry, the solution which carried the cocaine would evaporate, and the crystals would be deposited. I was eager to verify this proposition and promptly examined the next pulp removed. In its perfectly fresh condition no appearance of the cocaine could be seen, but after half an hour they were plainly visible, again following the blood tract to the very apex. After accumulating four or five specimens, in all of which these crystalline bodies could be discerned, I carried the experiment a step further, and undertook to reform the solution within the pulp after it had dried. To do this I took one of the dried specimens and soaked it in adrenalin for ten minutes. The result was not entirely satisfactory. The whole appearance of the tissue was altered and while the crystals seemed less apparent, still I could not decide that they had been redissolved. Next I placed a drop of cocaine dissolved in adrenalin on a slide and allowed the solution to evaporate. This left a coating of cocaine on the slide, and these crystals so far as I am a judge have the same general appearance as those seen in the pulps. Finally I examined pulps devitalized with arsenic and these do not show any such crystalline masses.

In the particular specimen to which previous allusion was made, the one in which pulp nodules were present, I could note the cocaine in characteristic masses about the nodules, but be-

yond, throughout the uncalcified portion of the pulp, the appearance was quite different; here if the cocaine was present at all, it seemed rather to have passed down between the canal walls and the pulp, forming a thin coatin gover the entire pulp, so that the whole mass has the appearance of an icicle. This specimen, fortunately, I still have. All the others, however, I regret to say were ruined by my mounting them in balsam. For some reason, which I do not at present comprehend, the crystals have practically disappeared after this mounting. I will request time, therefore, for further study of this rather interesting phase of the subject.

It is because of my present belief that the cocaine solution actually enters the pulp following the blood tracts that I strongly advise thorough cavity sterilization, for certainly any germs present may be taken up with the solution and carried into and even through the pulp to the tissues about the apex. I am not as yet sure that we have any reliable cavity sterilization which can be considered effectual within the few minutes usually allotted to the work. For this reason, in the presence of actual pulp suppuration, I should recommend sealing a germicide within the cavity for at least twenty-four hours, this to be followed by the further sterilization of the cavity after applying the dam. It might be that we would be safer to add a germicide to our cocaine solution. Certainly I have had very satisfactory results by using borine to make my solutions. This preparation contains formaldehyde besides other antiseptics. By this means, perhaps, even though some infectious material may become mixed with the solution its deleterious influence may be inhibited.

Following the method of the surgeon, I recommend a dry dressing in the canal proper, which in turn may be covered with a little ball of cotton carrying an antiseptic. I think I have seen good results from this method of drainage, for on several occasions where I had not really expected a secondary hemorrhage, I have found my dressing literally saturated with blood, and in these cases teeth have remained uncomfortable.

Lest it be imagined from the foregoing that all my experiences with cocaine pressure have been unsatisfying, and troublesome, and that therefore it be thought that I am contending against the method, I beg to state that the cases reported above are rather exceptional. I do believe, however, that they are of

such a character as to be constant under like circumstances. That is to say, that the same teeth or the same sort of teeth treated in the same manner, will be followed by the same sequelæ. It is for this reason that I have thought it worth while to record, and if possible, classify some of my failures. I say some, for while the majority of my pulp treatments by this method has been entirely successful, it is also true that I have not given a full list of all the troublesome cases which I have had.

DISCUSSION.

Dr. J. R. Owens, Cleveland.—The essayist has brought to our attention so many things of interest that it is impossible for us to cover all the points. They involve very careful consideration. I will consider only a portion of them.

Extirpation of pulps by pressure anesthesia is such a stride in advance of the arsenical congestion method that, if the essayist has found so many difficulties and probably there are others, it is a matter well worthy of our consideration.

The essayist defines successful operations as those where not only has anesthesia of the pulp been produced, but freedom from complications afterward.

His definition of failure is inability to produce insensibility.

He thinks there are cases where it is impossible to produce anesthesia of the pulp by a solution of cocaine and pressure.

He has divided all cases into four classes and given us the results of eleven cases he has had in the past year.

To review each or any of these cases presented might or might not be profitable, but that my experience has been in many respects so different would indicate that methods employed probably are responsible for different results.

Therefore I will proceed to give my way of treating the four classes the essayist has given us.

In the first place, I use a saturated aqueous solution of cocaine, and depend upon a large application of pressure to control the hemorrhage. Then if there is profuse bleeding, am inclined to think it is beneficial rather than otherwise, because the probability is that the cocaine instead of being caught up and carried through the arterial system, passes off in the expelled blood.

I check the hemorrhage by means of a broach around which is twisted a shred of cotton; this is saturated with adrenalin. The blood in the cavity of the tooth is removed with an absorbent and the broach quickly carried up into the canal and allowed to remain a few minutes and then carefully removed. If this does not succeed by several applications, I medicate a shred of cotton with creosote and after removing all the blood

possible quickly pack the creosoted cotton up to the apex of the root. If I wish immediately to fill the root, or roots, permanently, I find I can do so by leaving the cotton in the canal five or ten minutes. Then fill the roots of permanent teeth invariably with oxychloride of zinc and Hill's stopping for deciduous teeth.

According to Simonovitch, adrenalin is a heart stimulant only in the sense that it is dangerous to the action of the heart because of its liability to produce paralysis. The heart's increased action apparently is due to its consciousness of danger and its quickened afforts to eliminate the dangerous drug.

I presume adrenalin is used with cocaine in pressure anesthesia for the purpose of checking the hemorrhage. I believe the reason for the constriction of the blood vessels is in accord with the action of the heart, namely to keep out of the circulation so deadly a compound. For we note, according to Simonovitch, adrenalin can be taken with impunity into the stomach. We know of instances where adrenalin and cocaine have been used for pulp extirpation that serious heart disorder has quickly manifested itself. I have no doubt it has had to do with the complications the essayist recites of, but probably not alone. I should not expect anesthesia to be produced so quickly with adrenalin as without it, owing to the constriction of the blood vessels preventing the entrance of the cocaine.

The First Class, as the essayist has said, is the most formidable, namely, freshly exposed pulps.

My method is to remove decay until visible exposure of pulp. Apply dam when necessary, wash out cavity with three per cent. pyrozone, apply saturated aqueous solution of hydrochlorate of cocaine, using a bit of punk as a medium. With a piece of unvulcanized rubber of sufficient size to cover the cavity and produce a piston effect, I produce pressure until susceptible to the patient, and hold it there, increasing the pressure as rapidly as I can without pain to the patient, continuing until no pain is noticeable to patient, and wait a minute or more longer. Removing the punk I proceed as rapidly as convenient to make a free opening to pulp-chamber that I may have direct access to the roots of the tooth. Wash out the debris with three per cent. pyrozone and, with Donaldson broach, remove the pulp from the canals. If perchance the cocaine has not fully anesthetized the pulp, I treat with cocaine and pressure again. This generally brings success, but there are a few cases where sensation will still be in the roots. These I treat in the following manner: Take a roughened, not a barbed, broach, twist about it a shred of cotton, saturate with cocaine and insert into canal until pain is felt, and hold. In a few seconds it may be pushed up nearer the apex, and so continue until the apex is reached. Then twist the broach and the pulp will become entangled and can be removed.

The essayist rightly speaks of the removal as a surgical operation requiring the same consideration to stop hemorrhage as other surgical operations. This twisting off of the pulp at the apex seems to me the best treatment for that purpose. The cauterizing effect of creosote completes

the work. If for any reason I believe all the pulp has not been removed from the canal, I do not make immediate permanent root filling, but pack the roots with creosoted cotton for a future sitting. I think the only time the surgeon would, as the essayist says, leave open a wound is when suppuration exists. Where it is a clean fresh wound he would seal it as completely as he could with antiseptic stopping as quickly as possible to prevent contamination by septic surroundings.

Dry absorbent cotton may not be aseptic. Simply fingering may have contaminated it. I believe it is necessary to not only have cotton sterile, but medicated with an approved antiseptic solution. This should be packed to the apex of the root to prevent clot of blood forming in the apical end of the root, which clot, if permitted, might become a source of irritation. The very thing the essayist makes a point of I should try to avoid, namely, using the dry cotton in order to draw into it any blood that may be outside that is in danger of forming a clot.

There is little probability of the blood outside the root clotting if air does not get to it. There may be some congestion, but no serious harm may be expected if sepsis is kept from the root canal.

The Second Class—lesions, where the tooth is filled either permanently or temporarily.

I make a free opening to the pulp in order to determine the state of it. If suppuration exists, all pus should be removed by syringing with three per cent. pyrozone. Great care should be exercised to determine definitely the vitality of the pulp; nothing should be taken for granted with this class of cases. Remove as much of the pulp as can be without torturing the patient. Very often the pain experienced by the patient is due to pressure caused by the generating gases or congestion, and when this is relieved the operator finds the pain is gone and he can proceed to remove a *dead* pulp, or it may be, a partially dead pulp, that in the canals only being alive, and then perhaps not all the canals have live tissue. All of these things should be carefully considered in these cases, because the treatment in a canal in which the pulp is dead demands different treatment from the one where live pulp tissue has to be removed. The dressing for live pulp canal in my hands is (after pyrozone, which I use in dressing all pulp canals, before a medicated dressing) beechwood creosote. For dead pulp canals, tincture of iodine. If I have reason to think the socket of the affected root is involved, I fill only the healthy root or roots with creosoted cotton and Hill's stopping, and having wiped out the diseased root thoroughly with tincture of iodine, dismiss the patient for a day. Then after washing thoroughly with pyrozone, fill the apical end of the root with iodized cotton, on top of that creosoted cotton and Hill's stopping. Iodine reduces inflammation, and where inflammation exists creosote, carbolic acid or oil of cassia increases it. If we remember those two facts in treating teeth when the pulp canal is involved we will be saved a great deal of vexation.

The Third Class—calcific material present in pulp cavity.

This class is more difficult to anesthetize because of sensitiveness and perhaps pulp hemorrhage long before the pulp proper is reached. Patience

and persistence is necessary to produce anesthesia. After that is produced the after-treatment is the same as the First Class.

The Fourth Class—pyorrheal mouths. Pulp removal resorted to as a measure of treatment.

This class requires careful diagnosis to determine dead and live pulps, but that having been given as carefully as in Class Two, and similar treatment employed, saves complications. Wherever congestion has begun the action of cocaine becomes uncertain and probably arsenious acid is more certain in destroying vitality. But as to suppuration after destruction of pulp by either method, I believe is unnecessary.

Dr. W. G. Ebersole, Cleveland.—I have had in the last six months two cases something similar to that described by Doctor Ottolengui. One patient, a lady, presented herself for my care, and from examination I found a beautiful set of teeth with the exception of what seemed to be a small cavity in the mesial proximal surface of the left upper central. Upon attempting to remove the same it was found that the decay had penetrated the pulp-chamber, which was abnormally large. Removed the pulp, using cocaine and adnephin, following the usual procedure under pressure anesthesia. After I removed the pulp I placed a dressing of oil of eucalyptus. In twenty-four hours the tooth was slightly darkened, and in forty-eight hours the patient presented with the tooth very dark and quite tender. Removing the temporary filling and dressing, I found there had been quite a copious hemorrhage.

Shortly after this I had a somewhat similar case. Since that time I have been using a few fibers of cotton carrying oil dressing, then filling the pulp-chamber with dry cotton. I have not had a repetition, but in removing the dressing frequently find there has been a somewhat slight hemorrhage; so it behooves us to use a dry dressing following the immediate removal of pulp.

I requested Doctor Ottolengui to give his idea of the results that may follow the Meyers method of obtunding sensitive dentine. At the last meeting of the Cleveland Dental Society I raised this question, stating that I was somewhat afraid of the after results. The heavy pressure used in forcing the solution through the dental tubuli into the pulp-chamber would, I was afraid, produce some pathological conditions which would be heard from in the future. It is only a question of what the result will be. The instrument used certainly produces wonderful results as far as obtunding is concerned, but it is a question whether it can be used universally without injury. In this instrument we use andrenolin and cocaine. We all know that andrenolin is a powerful heart stimulant and we must be very careful not to force andrenolin into the general circulation. I had a case in which I forced andrenolin through the tooth into the general circulation and I had a very badly frightened patient. She described the sensation as though some one were pounding her upon the head. The influence of the andrenolin was quite rapid and of very short duration.

I know of a number who have had somewhat similar experiences, and

I feel that all who attempt to use either andrenolin or adnephin, which is a twin sister of andrenolin, should be thoroughly posted as to the effects that may be produced.

In speaking of the effect of cocaine upon the pulp in the use of cataphoresis electrically applied, I wish to say that complete obtunding of the sensitive cavity may be produced without thoroughly anesthetizing the pulp. While in the use of the Meyers method the pulp is thoroughly anesthetized before the cavity can be prepared. The best proof that the pulp is not anesthetized or completely anesthetized, is that we may obtund the cavity and almost complete preparation of the same when we find that we have penetrated the zone of anesthetized tissue. I have maintained and still believe that in the use of cataphoresis electrically applied, that we may anesthetize the contents of the dental tubuli without materially affecting the pulp. This, of course, depends largely upon the size, shape and depth of the cavity. In some cases it will be necessary to carry your cataphoric influence far enough to anesthetize the pulp to a great extent.

EXTIRPATION OF TOOTH PULPS.*

BY CLARE L. FRAME, COLUMBUS, OHIO.

In a consideration of the ethics and prosthetics of a special work so modern and broad as this one, it is but natural that we are confronted with problems to be regarded seriously, principally for the reason that perfection in any line is only reached by many years of careful study and constant attention, especially is it true in this particular field because its application involves the physiological and therapeutic environments, naturally to be expected when it deals with the preservation or destruction of the natural teeth, and incidentally the health and comfort of the patient. At this time I will not attempt to question the feasibility of pulp extirpation, for to analyze the theories pro and con would require too much time, however, we all must acknowledge that the destruction of the vitality of the pulp of a tooth, whether it is to be subsequently crowned or not, is a very serious matter and should not be promiscuously practiced, but I can safely say that all of us come in contact with cases that require removal of the pulp and in badly broken down crowns of the ten anterior teeth there is nothing that

*Read before the Columbus Dental Society.

will approach the porcelain crown, which when used always requires devitalization. These are the cases which I wish to consider.

It is my intention to forcibly discourage the use of arsenic for devitalizing pulps. It is an agent I never use anterior to the molars and seldom in them, in other words I am thoroughly disgusted with it as a devitalizing agent.

First, it requires much more time than any other method even when you get satisfactory results. But in many cases dressings are applied to destroy the pulp, different preparations of arsenic being used, and left in for periods varying from one or two days or one or two weeks, in spite of which upon examination the pulp is discovered sensitive to the touch, perhaps another application is made and in a few days upon examination we find conditions just as before. We then, perhaps, decide we have calcification of the pulp. Cocaine is resorted to to complete the operation. And had it been used in the beginning a great deal of time would have been saved and a great deal of pain avoided for the patient. For in the presence of pulp stones, arsenic, because of the slow absorption, generally causes intense pain and is nearly always slow in producing sufficient destruction to permit the removal of the pulp. And even though pulp stones are not present it is almost impossible to devitalize, using this method, without the patient experiencing a great deal of pain, saying nothing about the dangers encountered. When we take into consideration the structure and functions of the tissues immediately surrounding a tooth and the susceptibility of the pericemental membrane to irritation and subsequent inflammation, we can readily see the danger in employing this agent especially in young persons and those who have a peculiar idiosyncrasy for it, and I might say that no case may be considered safe in proximal cavities that extend rootwise any distance under the gums. In these cases the patient is very likely to return with the complaint that the tooth is sore and giving trouble. Upon examination, we find the soft tissues inflamed, sloughing of the gums, tooth very loose and intensely sore, etc. You have all

been up against it, and know that such cases are very liable to cause a great deal of trouble to say the least. Is it any wonder the laity dread so much to have a "nerve killed," as they call it? Why not win the confidence of your patients by employing an immediate and almost painless method of destruction which, when once used, will remove the patient's dread of such an operation?

This may be accomplished very nicely by the use of a local anesthetic. We may, however, use general anesthesia; but in a minor operation of this kind the risks incident to the administration of a general anesthetic are too great when we consider the fee received for such operations, and besides a man cannot do two things at once with any degree of skill. He is very likely to be more concerned about the condition of the patient than he is about the operation itself. Then, too, a general anesthetic is never administered without endangering the life of a patient to a certain degree. This we cannot afford to do, besides it is not necessary. Personally, I use the hypodermic syringe with curved needle and about a two per cent. solution of cocaine, with which I have no difficulty in anesthetizing any pulp I wish to remove to the extent that the patient will experience comparatively no pain at any time during the operation.

Before I proceed to describe the method I use, I wish to state that I hope those who may give it a trial for the first time will not pronounce it a failure even though they do not get the best results; just a little perseverence and there will be no question about splendid results. Perfection is obtained only in this way. I will first describe those cases that require devitalizing, and are to be subsequently filled with gold or porcelain for the reason that teeth that are to be crowned either with a porcelain or a richmond crown are treated entirely differently.

Now, in this method as in all others, it is very important to have direct approach to the canals. This is very easily accomplished in the six anterior teeth, an access may be obtained at the palatal pit even though approximal cavities may exist. We then are in a direct line with the canal which greatly facilities the removal of the nerve and the filling of the canal, and I may

say with less destruction to tooth structure. I suspect there are some who will doubt that this can be done without causing the patient to suffer a great deal; but I am here to say that it can be, and almost without pain and the most nervous patient will permit the operation. In obtaining an exposure of this kind we must use sharp burs, an almost constant blast of cold air from the chip-blower or compressed-air tank, and an occasional application of ethyl chloride or carbolic acid; these combined with the usual care we should exercise in any operation and we have accomplished what would seem the impossible to those who have never tried it, a painless exposure.

We are now ready for the hypodermic injection which is made just as for extraction, using, of course, the rubber dam or napkin to prevent the surplus solution entering the mouth, removing the nerve with a suitable broach as in any other method.

In bicuspids and molars it is more difficult to gain access to the canals but just as important, otherwise it is practically the same operation as with the anterior teeth.

I have said nothing about the pressure method for the reason that I prefer the one just described to it or any other.

When a porcelain or a Richmond crown is required, I prefer to excise the natural crown before destroying the pulp. This can be quickly and easily accomplished in any of the ten anterior teeth by cutting grooves with a knife-edge stone, or a vulcarbo disk about one-eighth of an inch from the gum. I prefer this length for the reason that it permits the removal of the enamel which should always be done before dressing the labial portion under the gums.

Care should be exercised in cutting the grooves, using plenty of water and no pain will be experienced. The grooves should be entirely through the enamel, which will relieve the shock and prevent a fracture root-wise. The beaks of the excising forceps may then be placed in the grooves and the crown easily and safely removed. In almost every case I have been able to inject a solution into the canal after this operation

with comparatively no pain to the patient. The nerve is apparently partially deadened long enough to permit injection.

I a few cases I have been able to remove the nerve without using the cocaine. In all cases I obtain the very best access possible which permits of an easy and perfect extraction of the nerve. There is, however, liable to be some hemorrhage following extirpation by this method but I do not consider this a fault provided immediate filling of the canals is not resorted to, nor powerful styptics used. It is my opinion that bleeding is a relief to the irritated tissues and can be considered a benefit rather than a detriment.

I should never consider it good practice to attempt to check the hemorrhage in these cases nor to fill the canals until the bleeding has naturally ceased, unless we wish to increase the liability of periapical inflammation. We can easily avoid this by waiting until the next visit to permanently fill the canals.

ETHICS IN PRACTICE.*

BY KING S. PERRY, D. D. S., IRWIN, PA.

Ethics means courteous, gentlemanly treatment of our fellow-men, especially of those in the same profession or calling in which we may be engaged. We cannot expect ethical treatment from one ungentlemanly in manner, gross in appearance, no matter where in life he may be found. An English author has said that Christ was the first true gentleman, and he might have added that He was also the greatest, most ethical Teacher the world has ever known.

Now I presume you are all aware that there are many in our profession who are not "wide-open quacks," and yet, though not advertising publicly with printer's ink, they are, nevertheless, unethical. These are more to be feared than the advertising man who deliberately swindles the people. These are wolves in sheep's clothing, who, when consulted by the patient of another practitioner, make enquiries and hints disparaging to the family dentist, or implications calculated to lessen the confidence in him.

*Read before the Odontological Society of Western Pennsylvania, 1904.

Perhaps to the dentist in our smaller cities, in the so-called rural districts, the influence of the unethical man is most keenly felt, and recognized. Do you ask why? Our answer is, that dentistry, to a large proportion of the population in the small sections, is nothing more than a trade; a dentist, one who extracts teeth for a nominal sum, replacing the same with a cheap plate, or he is a patcher of teeth. Even the other professions, including that of medicine, to which we are so closely allied, look on our degree as a "badge or partial culture," or no culture at all, as the following letter recently received by me from a teacher woud indicate.

DEAR SIR:—I have a dental contract to let, two crowns and bridge. What is the lowest figure for which you can do it? I have been having a dentist in ..... do some work for me, but thought I'd get your price, too, on the work. Please let me know, also, the best time it will suit you. Respectfully,

.....

This is only one of many such experiences I have had in my own practice, coming not alone from teachers, as just cited, but from all the professions—medicine, law and theology; of all the professions perhaps no one has displayed a more marked ignorance with regard to the teeth—then usefulness to the human economy and hence the extreme importance of caring, in the best possible manner for them—than the profession of medicine. I venture to assert that only a small percentage of our medical men has ever given the care or hygiene of the mouth more than a passing thought; feeling rather that teeth are convenient to have so long as no pain from them is experienced, and that when trouble arises, they are to be extracted, either by the physician (inexperienced as he is) or in a "dental parlor" by a "painless dentist." So the slaghter goes on year after year, for the simple reason that so large a proportion of the people are never advised to care for the preservation of their natural teeth. When the medical profession recognizes the profession of dentistry as a profession and as one in close touch with its own work—clean, healthy mouths aiding materially to throw off disease germs—then will we find a people as careful and eager to preserve these natural teeth and as ready to advise with a conscientious ethical dentist as are these same people to seek advice from a conscientious, ethical physician. To create this sentiment we must not

look to the co-operation of the medical profession, alone. We, as dentists, must recognize the necessity, must be alive to all that tends to advancement keeping always abreast of the times.

A dentist having a lucrative practice is asked, "What dental journal do you read?" the response, "Not any, I do not subscribe for any, do not have to read the journals," arouses within us a feeling of pity, a spirit of righteous indignation, that one of our own rank and file can thus carry on his work and again we recognize the battle we must wage against those who are so ignorant, so unscrupulous, and yet have been like ourselves accorded the degree of Doctor of Dental Surgery. Let us go back of the degree. Is there a flaw in the instruction along the line of ethics in our colleges? During college life the student of dentistry rarely hears of ethics, in fact the teaching in our colleges would rather drive from, than toward, ethics.

Is it any wonder then, that we who would recognize a code, who would be ethical in our practice, find many obstacles to overcome? As we are brought almost daily in close touch with the unscrupulous grasping man devoid of all sense of the ethical. Such a man is a detriment to the profession, not alone because he is unethical, but because he performed inferior work disfiguring to the mouth and at a cost so nominal that the skilled operator is embrarrassed, being unable to perform skillful, painstaking operations without receiving a much larger remuneration.

It is a fact that the percentage of dentists who make a financial success in life is smaller than that compared to the other professions. Wherein does the fault lie? We would answer, "With the dentist himself." It is the dentist's duty to charge well for his services; it is a duty because good fees impel good services. In the majority of small towns the price of various operations in dentistry are as well known as the price of sugar. Just think of having a stipulated price for an amalgam filling or a gold filling without reference to size or position, whether simple or contour.

Each dentist should be the best judge as to the value of his own services and they should be rated high enough to allow him in all cases to give the time necessary to make as successful an operation as his ability will permit.

Be honest, be ethical, with your patient and he will meet you half way at least in willingness to pay for good services. What

dentist thinks in his thoughtful moments, that he is unworthy of as good a home and surroundings as his brother who practices medicine? We expend more money before we possess our diploma than the medical man and our office expenses are heavier.

Again, we should not overlook a matter of grave importance, namely, the morals and standing of a dentist in his office and community which will help maintain a respectable fee for all services. Let us take thought to our manner of living, the influence we must exert and endeavor to maintain at all times, among those with whom we come in contact, financially and socially, a standing worthy of the profession to which we have been called.

An earnest effort should be made to gather into dental societies those outside who are worthy, for societies develop fraternal regard and common brotherhood and lead to mutual improvement and enjoyment. In strengthening them, we strengthen ourselves, and we may save many from the evils of quackery.

Would it not be advisable to organize dental clubs in rural places and sections of our cities to informally discuss matters of mutual interest. Surely this would be an uplift to all. Some one has said the greatest ethical law ever written is, "Do unto others as ye would that they should do to you." The man who follows this law of ethics will be successful and have the respect and confidence of his patients.

DISCUSSION.

Dr. O. L. Hertig.—Ethics is simply this, good manners in the profession. First, between man and man. Good manners lie in the sense of justice, in the sense of the saying, "A gentleman is born, not made." It takes a brave man to praise another man's work, when he knows his own is inferior.

Dr. A. F. Toy.—I have in some cases found that it is not only helpful to one's self, but most encouraging to patients to speak well of the work which I see in their mouth's from another practitioner. I find making a remark of that kind gives them confidence, and brings a good result.

In one case a man came to me, he was the private secretary of one of the large enterprises, and wanted some work done, a crown put on, and other operations.

He had some work of that kind in his mouth and I made a remark

that if I could succeed in doing as good work as that I would be satisfied. He said to me, "Well, if you had said anything detrimental about that you would not have done any work for me, for I know that is good work." I know that as many as a dozen or fifteen patients have come to me from that one party. We do ourselves no injury if we speak complimentary of another's work.

PRESIDENT'S ADDRESS.*

BY DR C. C. TAGGART, PITTSBURG, PA.

At this annual meeting permit me to congratulate you upon the highly prosperous condition of this society. Our membership list, including the names of many, not alone from western Pennsylvania, but from Ohio and West Virginia, is larger than at any time since organization.

The treasurer's report is most satisfactory, and shows a balance in our favor that places the society in a sound financial condition.

A society with such a membership should be of great value to our profession, and this fact should be recognized by the members, individually. How better can this be accomplished than by each member evincing a readiness to lend a helping hand in these meetings as they come before us, *once, twice* each year; let us be ready to write a paper, give a clinic, demonstrate some new feature of our work, enter with earnestness in the discussions upon the papers that are read, and in all ways practicable, show an interest in and for the society, thus deriving an inspiration to more thorough, conscientious work and admitting of social relations productive of brotherly kindness and charity one toward the other.

At the September meeting your executive committee presented a program consisting of clinics exclusively. From the many expressions, commendatory of this meeting, we feel assured they were guided aright, and we trust that in the program before us to-day our members may find much of interest and large profit. To the executive committee we are greatly indebted personally, and desire to publicly express our sincere thanks for the cordial earnest work accomplished during the year just

*Read before the Odontological Society of Western Pennsylvania, 1904.

closing. One must be in close touch with the workings of a society of this size ere he can fully appreciate the large amount of preparation necessary to the presentation of a program such as you have received to-day. The work of this committee is most important; it involves labor and loss of time—frequently obstacles of considerable magnitude must be overcome—therefore let us show in this meeting our appreciation of the committee's work by heartily co-operating in each of its sessions.

To our energetic and painstaking secretary we, as a society, owe a debt of gratitude. His is a labor of love, and labor it is, as he serves us so faithfully and untiringly, year after year. To him, and to all the officers, we desire to express appreciation and sincere thanks for the cordial co-operation that has been given throughout the year.

Since our last annual meeting we have lost by death a charter and honored member—Dr. J. E. Libbey—one, who by his conscientious professional work and Christian character, has left a high standard for us to measure up to. In reviewing the year we may indeed feel proud of the advanced position our profession has taken. Along the line of prevention we are keeping step with the medical profession, for in these days the trend is toward *preventive* measures in the battle with disease.

Oral prophylaxis is the method by which we can reduce dental disorders to a marked degree, and probably relieve or cure many systemic troubles.

In the unification of dental laws and the interchange of license with other States, there has been decided progress, and we should give our examining boards to understand that we *want interchange* throughout the Union.

We would suggest that this society appoint a committee each year, whose duty shall be to seek out the young men as they graduate from our colleges, and urge them to become members of our society; make them to feel *they* are needed by *us* to further the progress of our profession, and that they need the fellowship and counsel of older practitioners as they enter the arena of their life work.

Again, we suggest the appointment of a committee, whose work shall be to gather evidence (at the expense of our society) against illegal practitioners, of which at least a score are to be found in this vicinity. We are informed that where *evidence*

is obtained, the committee on the enforcement of the dental law, appointed by the State society, will appear as prosecutor, thus relieving us of the odium of local prosecution and giving the prestige to the State organization.

We would especially urge our members to join the State society, and to attend its annual meetings. The dental meeting, from whatever point we view it, is necessary to professional progress, not alone to the individual, but the profession at large, and neither effort nor money should be spared to make our own meetings or those of the State of great help and value.

ADMINISTRATION OF NITROUS OXIDE AND OXYGEN.*

BY C. K. TETER, D. D. S., CLEVELAND, OHIO.

The clinic was to demonstrate the administration of nitrous oxide and oxygen in definite proportions with the Teter apparatus.

The patient to whom the anesthetic was given, had a cuspid that was to be moved by immediate regulation. The anesthetic was perfectly satisfactory in every respect. The patient was not aware of any discomfort whatever. The natural color was retained throughout the three or four minutes of complete anesthesia.

The second patient had only a single extraction. And as this took but a moment the anesthetic was not carried on for any great length of time, as the Doctor said, "there is no sense in prolonging anesthesia just because you can for any longer than is absolutely necessary to accomplish the work in hand."

*Clinic at Ohio State Dental Society, December, 1903.

PYORRHEA ALVEOLARIS.*

BY L. A. SALISBURY, D. D. S., CROWN POINT, IND.

P. A. Rigg's disease, interstitial gingivitis, phagedenic pericementitis and numberless other names have been given to the ever-present and more than disagreeable condition of loose teeth, flabby, inflamed and diseased gums. This condition has undoubtedly always been present, since skulls of very ancient age, upon examination, are found to have the teeth more or less covered with an accumulation resembling tartar at the gum line, and there is no question but that the ancients suffered from this cause as we of modern life. This condition is also common to dogs and other animals. Pyorrhea alveolaris is a term commonly applied to this inflammation of the gums, alveolar process and peridental membrane, but as you cannot have pyorrhea alveolaris without pus infection, the majority of cases diagnosed as pyorrhea are simply stages of gingivitis in greater or less degree of intensity. There are, of course, a great many cases of genuine pyorrhea, but let us be correct in our phraseology and study it as two distinct, although allied diseases; in time a gingivitis will, I feel terminate in pyorrhea. We have men standing high in our profession who say dogmatically that the condition cannot be cured, and also men of corresponding position who go to the other extreme and say that all cases can be cured. Let us take rather a conservative course and say that beyond a doubt, a majority of cases can be cured with careful attention to detail, on the operator's part and with the assistance of the patient as, without this co-operation, a cure cannot be effected in any case.

Reported observations of this disorder date back at least to 1748, but it was not designated at that time by any special term; in 1823 and 1860 it was described as "conjoint suppuration of the gum and alveoli;" up to 1880 the concusion was that the gouty, the diabetic and the albumin uric were the only sufferers; it was not until 1875 when Dr. John W. Riggs read a paper on this subject that it began to attract the attention of the American dentists; in 1886 George Black prepared the most exhaustive paper in print in the United States on pyorrhea as a local disturbance.

The study of pyorrhea is a very complicated one and in order

*Read before the Indiana State Dental Society, 1904.

to get it before this convention in as simple a manner as possible, and simplicity is what we are all after, let us designate the two main stages of the disease; as pyorrhea simplex or intestinal gingivitis. These case beginning, not at the gum margin, but immediately under, and pyorrhea complex beginning under the gum about half way or more toward the apex of the tooth and in which pus is present.

In pyorrhea simplex the diagnosis is by sight and touch and usualy by odor with more or less severe pains, the gums are tumid and contact of the digit will show the presence of flat, dark and flrmly adherent scaly calculi, the prognosis in this stage is good, no matter how far advanced, provided surgical tests of the affected parts can be obtained which will necessitate, of course, removal of cause. This is a class that in some cases seems to grow into magnitude, sometimes in twenty-four hours, usually one or two teeth are affected in these acute attacks and which have all the symptoms of blind abscess or inflammation of the antrum of highmore and therefore careful diagnosis is necessary, usually these acute attacks yield to treatment in from thirty-six to forty-eight hours.

Pyorrhea complex or pyorrhea proper is usually chronic extending over a considerable time. In this class those inclined to gout or syphilis or any constitutional disease are harder to cure, and also in pyorrhea complex it will be noticed that it is often the people with the best dentures, those apparently practically immune to decay, that are affected by this trouble, and usually about middle life. It must also be mentioned at this point that children of parents, either of whom have had pyorrhea at any time in their life, will also have a tendency toward it and that if one parent has it, after a few years it will be noticed that the other parent has contracted to a greater or less degree the disease. This at least has been my observation, although I have never found anything in literature on the subject to bear me out. In nearly all cases more or less erosion has taken place, and upon excavation, it will be found that the pulp has receded and usually canals have been filled up. The gums are tumid with soreness and severe neuralgia pains, but with the focus of the action almost always about the apical extremity, local gingivitis not being present, mark the difference in this from the pyorrhea simplex, in which the inflammation is just under or at the gum line, after

the congestion remains awhile, suppuration will ensue, but nearly always also at the apical extremity, the pus will burrow and following the line of least resistance will form a fistula labially or buccally similar to an abscess from a devitalized pulp, or runs along the root to the gingival border where it mixes with the oral secretions.

Once established, this condition will continue for years. The extent of the growth being dependent upon the general health and habits of the individuals; as the irritation extends the alveolar process becomes softened and more or less absorbed, in time exposing the entire root or roots of teeth affected. The next step is the loss of the organs and when this result is accomplished the disease at that spot is arrested, the tissues and structures become healthy and normal; according to Doctor C. N. Peirce the deposit in this class, pyorrhea complex, is not caused by saliva (in pyorrhea simplex deposits are caused by saliva) but should be called serumal calculus. They show upon analysis to be composed of uric acid salts in part.

Sex does not have much influence on this disease and it usually appears between the ages of twenty-five and fifty, although several cases have come under my care at the age of eighteen and fifteen, but none above fifty. As regards diet, I find the class of people designated as high-livers are usually predisposed to pyorrhea. Sedentary occupations also have an important bearing on the disease. Admitting that the local cause is primarily calculi, we must also say that malocclusion, bridge-work, poorly-finished fillings, wedging, decomposing articles of food, are of assistance in setting up the inflammation. Constitutional causes are principally drug poisoning.

Doctor Talbot says that the causes which, acting locally, produce direct pyorrhea are the toxic effects of mercury, lead, brass, muric acid and other acids, potassium iodide and other agencies acting in a similar manner. This of course is true, but a great many cases are caused by the careless use of brush and powder. I have seen very few cases of pyorrhea or gingivitis in mouths that were kept clean. Rheumatic conditions are of course at times positive factors. Any lowering of the vitality of the system should be viewed with alarm and carefully corrected, as a great number of cases of pyorrhea as well as other diseases have their incipiency immediately after an attack of sickness and rapid

loss of tissues takes place at that time. This is beyond contradiction and should be kept in the mind of all professional men at all times.

In time I believe that instead of most of us engaging in general practice there will be to a large extent, more special work done. We will take up that branch of dentistry which appeals to us and therefore become more proficient in method and detail than we can possibly attain when trying to practice all branches, as most of us do now, but notwithstanding that this is an evident truth, we as dentists are not doing our duty to patients if we do not take up the study of pyorrhea alveolaris, master the technic of operating and give our time to treating this condition.

I have heard some men say that they have not the time to treat pyorrhea and that the people will not pay for this class of work. This is a mistaken idea. No matter how small or large a place you may be located in, there is no branch of your profession that will return such large fees as the successful treatment of pyorrhea alveolaris, and in satisfaction to yourselves no branch that can repay you more for your labor, and it is labor of the most delicate nature, but it is worth all the convenience and energy spent.

Let me quote from Doctor Younger: "Time is a necessary factor in the removal of deposits. You cannot hurry your movements as in the other mechanical processes of your art, because you have not the sense of vision to assist you and besides the additional energy that increased activity requires is opposed to that tranquility in which the sense of touch is most efficient. You cannot be patient in a hurry, and upon this perfect patience and this delicacy of touch the cure of pyorrhea depends altogether, and it is on account of too much haste probably that the profession, especially those driven for time by a large practice have been unsuccessful in the treatment of pyorrhea."

I wish to give credit to Doctor Talbot, Doctor Peirce, Doctor MaWhinney, Doctor Hotz, Doctor Younger, Doctor Adare, Doctor Black, Doctor Achorn and others for the assistance their articlase have been to me in writing this paper.

DISCUSSION.

Dr. J. A. Dinwiddie, Lowell.—Historically, I might add—to what the essayist has given—the names of some of the men who have been prom-

inent in the work of pyorrhea alveolaris, and I have found that articles have been published by Fauchard, 1746, Toirac in 1823, 1860; Dr. E. G. Magitot in 1867, J. W. Riggs in 1875, Dr. F. H. Rehwinkle in 1877, Dr. L. C. Ingersoll in 1881, Dr. A. Witzell in 1882, Dr. G. V. Black in 1886, Dr. W. J. Reese in 1886, Dr. John S. Marshall in 1891, Dr. C. N. Peirce in 1892, 1894 and 1895; more recently by Drs. J. E. Cravens E. T. Darbey, H. H. Burchard, G. V. Black, M. L. Rhien, E. C. Kirk, James Truman, Louis Jack, R. R. Andrews, E. Talbot, Younger and others.

The essayist has given us a division of the diseases into pyorrhea simplex and complex; while this differs somewhat from the previous divisions given by Doctor Rhien, of New York, yet it is nicely done.

The essayist does not enter into the cause of the disease, so we have no point of discussion on that. I might add, however, that investigators differ very much as to the cause of this disease. As far back as 1886, Doctor Black looked for some specific organism. Doctor Cook, of Chicago, has found a specific organism that has produced beautiful cases of pyorrhea alveolaris. It is interesting to note the different steps of progress in the work of the investigators of this disease, and as yet the cause is not satisfactorily explained.

Carl D. Lucas, M. D.—To achieve anything like success in the treatment of pyorrhea, means careful preparation, much study, and earnest efforts of the operator, combined with thorough co-operation of the patient.

In obtaining the co-operation of the patient, we should agree with the essayist that the specialist is able to accomplish more than the general practitioner, because he is interested particularly in this kind of work and has made a special study of it, is able to inform his patient upon his individual case and thereby awaken the patient's interest in his own case.

The "egotistical hobbyist," who is not broad-minded enough to see and to incorporate in his methods the good methods developed and given by others, should not be classed as a specialist, but as a "crank."

I agree with the essayist that the general practitioner of dentistry, to be a competent man, necessarily should be thorough enough to treat any diseased condition of the oral cavity with reasonable success. But if the general practitioner does feel a lack of confidence in his ability, or does not feel warranted in devoting the necessary amount of time which the condition demands, he should not undertake to hear pyorrhea at all, for in order to do the work successfully he shall have to devote a great deal of time to the treatment and occupy his spare time in preparation and study to learn how to do the work.

The essayist's "underlying fact" has been, and still is, a source of a great deal of controversy. He states in his underlying fact that "we have a localized inflammatory condition of a degenerative nature, and in order to cure it we must rely largely on local measures."

Since he has limited the treatment to local measures, I cannot agree with him. In fact, I do not question the advantage of constitutional treatment in any or every case. My first attempts at the treatment of pyorrhea were purely of antisepsis, instrumentation, prophylaxis and the use of some few of the proprietary preparations, etc. I shall have to confess that

my results were not satisfactory to me, whether my unsatisfactory results were due to a lack of ability, to instrumentation, or otherwise. But since I have begun to use constitutional and local measures my results have been very much more gratifying.

After careful chemical tests of the serumal calculus, microscopical examination of the exudate and some study upon the subject, I have yet to be convinced that pyorrhea, in the true sense of the word, or perhaps better, suppurative pericementitis, is directly associated with the systemic disorder known as lithæmia, or the uric acid diathesis.

All sanguinary calculus which I have examined carefully chemically, by first moistening the calculus with nitric acid, drying and moistening the red residue with ammonia, a purple red color is obtained, called murexide. This demonstrates the presence of uric acid in the sanguinary calculus. The peridental membrane is both periosteum and joint tissue and it has been proven that an arthritis, which may affect any joint in the body, is the typical expression of the uric acid diathesis. Joint tissue is very dense and of a fibrous variety and is supplied by capillaries. Although its vascular supply may be extensive, the circulation is less active than in other tissue, and it has been demonstrated that fibrous and cartilagenous tissues possess a relatively lower alkalinity than other varieties of tissue, and more often contain appreciable quantities of uric acid and urate salts. These are some of the factors which render the alveola-cemental articulation prone to the same conditions that are observed in other articulations and susceptible to the same causes. The pericemental membrane lines the tooth socket upon its outer surface and covers the cementum with its inner. Owing to its being walled in thus by bone tissue, it has less chance to accommodate itself to inflammatory conditions. The constant irritation which these roughened bodies produce in the pericemental membrane by their presence and the movements of the tooth root upon which they are attached causes an exudation to be thrown off which is not entirely taken up by the lymphatics. This exudate, from lack of nutrition, loses its organizing power, because infected by pyogenic micro-organisms, degenerates and forms pus. The leucocytes or white blood corpuscles, which have migrated to the infected territory, die and become the characteristic pus corpuscles. The plasma melts down and is mingled with the extravasated serum of the blood. The tissue in the immediate vicinity becomes infected, degeneratees, breaks down and the pus socket is thus formed.

Now, how can any man anticipate anything like even a semi-permanent result by resorting to instrumentation and prophylaxis alone, when the same constitutional dyscrasia retains itself? Should he not go farther in his treatment and combat the constitutional disorder, or the uric acid diathesis, which is primarily responsible for the deposition of the urates or the sanguinary calculus? If the constitutional disorder is not to be dealt with and the same systemic condition allowed to exist, only local measures being taken, I should expect very temporary results, for it should be but a short while until that same systemic dyscrasia should manifest itself, as it did before local measures were taken.

I should agree with the essayist that splints should be used in some

cases where we find the affected teeth very loose. In these instances I should scale the teeth first, after prescribing the constitutional treatment, of course, then adjust the splint.

As to the devitalization of the affected teeth, I can see no advantage to be gained by the method. I have tried it, with no appreciable advantage whatever.

Faulty occlusion is probably an aid in hastening the end in a case where the patient's system is affected by the uric acid dyscrasia, but I cannot believe that faulty occlusion alone could be the cause of any case of pyorrhea.

I have used very few proprietary remedies and cannot say I was rewarded by any great degree of success. I regard massage as a very practical aid. Thorough massaging of the gums not alone stimulates and produces a tonic effect, but causes the evacuation of the pus, and relaxation of the tissue which produces rest to the parts.

I know nothing from personal experience about the X-ray treatment, but have noticed heralded results by specialists who use the X-ray treatment.

Prophylaxis plays a very important role after and during treatment, but I shall not dwell upon that subject.

It is wise, as the essayist points out, to see these patients at frequent intervals, and if any signs of a return of the malady present, we should examine the affected teeth thoroughly for any particles of calculus which might have been overlooked and instruct the patient anew about the importance of the constitutional treatment.

F. R. McClanahan.—There was one point that struck me, and that was the statement that cases of pyorrhea should be treated by a specialist. I believe that the reason we do not treat this disease more is because we are afraid of it, and we usually get out of the treatment of it if possible. My first thought, when I started into a case of this kind, was about my fee. I wondered if I should charge the ordinary fee for cleaning teeth. There would be infinitely more work about it. I was working on the mouth of a gentleman, and I told him that it would cost him so much for me to treat the case, and I believe I told him thirty-five or forty dollars, and I got my price all right. If we were not afraid of our cases we would get better cases and of course better fees, and could go to work with more grace, and do a better class of work. Some of us are afraid to mention fees. I think we should charge for this work, for it is worth more than any other work done. It seems to me our fees for this should be larger than for anything else we do. We should not expect to treat a case of pyorrhea in a day or a week or a month. We should devote ourselves conscientiously to this work, and we will certainly meet with a degree of success, at least. The worst cases that come before the ordinary practitioner, it seems to me, it would be well for us to send to a specialist.

In regard to local or constitutional treatment. I have had my own teeth in a fairly good condition, but sometimes my mouth is in a much worse condition than at other times, and therefore it strikes me that my mouth is in a worse condition when my system is run down, and that the

constitution has an important part in this disease; in my own case I am quite sure I can prove it.

Now in regard to the pulp. I have had some experience along this line. Increase the flow of blood to the membrane surrounding the tooth, and it will be very effective in throwing off the disease. A good supply of blood, good healthy blood, will assist in curing the disease.

Doctor Ames.—I have a little to say upon this subject, and I wish to say that the point that struck me in Doctor Kahlo's paper was the slight allusion that he made to rest, and as I have followed this matter in attempting to cure pyorrhea, it seems to me the question simmers down to surgical rest. I have come to believe that nine-tenths of the doctors, when they attempt to treat these cases, depend upon bringing about what might be called surgical rest. This brings up the matter of malocclusion, and also the matter of splints. The query has been this evening how much malocclusion plays in bringing about these conditions? I believe that all questions of the result of malocclusion with mastication along with malocclusion, depends upon whether we have an idiosyncrasy in this disease. We may have malocclusion and no tendency to this disease, and also malocclusion when the patient does not subject any of the teeth to severe strain. Malocclusion is very severe where there is a strain in mastication. It is a very potent feature, and I think I have seen cases where the teeth had broken loose and definite pyorrheic conditions had been developed because of the wrenching of one particular tooth in its socket, which we may not have in other cases, and the predisposition of some teeth affects them to a greater extent than others, because some teeth are given a greater strain on account of the habits of the patient. If we undertake to treat cases like the above, one of the procedures must be a splint, which means the prevention of the return of the disease, and simply bringing about what might be termed a cure. And when it comes to making a splint, I don't know that a splint amounts to anything unless it is actually a fixed splint, which gives surgical rest to the parts. If you have loose teeth which will be lost anyway, the only safe treatment is a bridge. I should expect to give a patient value received in constructing a bridge, which will be a great deal of work for me, and of course will cost the patient a pretty sum. If there were no teeth above or below, I would not hesitate to make a twelve-tooth bridge for the upper. Where there were only four or five or six very loose teeth to depend upon I would expect that patient to have years and years of comfortable use from such an appliance.

Now, there is no use for me to take any more of your time talking about medical treatment or surgical procedure, outside of the surgical procedure of preparing a tooth for the bridge, and there is no use of my taking your time for that. I would construct this bridge to the best of my ability. I would construct it very carefully, accurately and nicely, and would give the roots surgical rest. Many of these things have been spoken of. I do not know of any procedure that would benefit your patient that will bring you better fees than bringing you a greater appreciation from the patient in giving him the use of the few or many teeth that have been

absolutely useless to them before treatment, and by constructing a splint, which would be a bridge, that would give them full use of their teeth.

QUESTION.—I would like to ask the doctor, how long he would have a patient wear these splints, if he has a full denture? Would you construct a splint when there was a full denture, and expect that splint to remain temporarily, or permanently?

DOCTOR AMES.—Of course you would generally have present spaces. If you had separate conditions, the conditions I had in mind, you would have conditions calling for the filling of the spaces. I would construct an eight, or twelve, or ten-tooth bridge for the rest of their life. It has been my experience with treating them that the scaling is done before constructing the bridge, and after the scaling, the gums will become almost normal, or practically so. If you put the teeth at rest there will be no further trouble, which is the proof of the pudding to me. If a case should be presented which I could not handle in this way, it might call for a different sort of splint. I would not cut a tooth off and make a crown or bridge because it called for some other kind of a splint.

QUESTION.—My idea is that the molars are very rarely affected, and in constructing splints for the molars in relation to the other teeth, would you construct that splint as a permanent or temporary splint?

DOCTOR AMES.—If it means a splint, I would put something on there for the rest of their lives. I might crown the tooth or make a gold inlay of some sort.

DOCTOR COOK.—I think Doctor Ames did strike the key-note of the successful treatment of pyorrhea, by putting a part at rest, which was also mentioned by Doctor Kahlo. If, by accident or by inheritance, a person has acquired a condition of tuberculosis, there might not be enough cause to cause fractural dislocation, but undoubtedly in the course of a few weeks or months a tubercular joint would be developed. The only means of stopping that disease and bring the part back to a normal condition, is by rest. This is accomplished in a number of ways, and the most common way is a permanent splint, or a dressing that holds that part in absolute immobility for a definite length of time, and the object of putting that splint on the joint is, as I said before, to insure perfect rest, the same as putting it in a plaster cast. That is the common practice for all of these conditions. Now the same is true of pyorrhea alveolaris.

I said to Doctor Kennedy the other day that I believed in inheritance of diseases. They may be inherited or acquired, and this is true of all diseases, regardless of what they are, and of their nature or extent. The first thing is the acquired or inherited predisposition to disease. What is the exciting cause, and if this cause were to come down to local diseases, we would likely find that it is bacterial. We may also have what is known as a sinus, one that acts in conjunction with the other organisms, but possibly this one is the wedge. This is the one that takes the lead, possibly, in the existing cause, on that condition which might be, as said before, a number of organisms, because in some instances we have a pus formation;

in others we are unable by any means to discern any pus formation. Now the question of treatment without going into any further discussion. I would like to mention in connection with this another thing that has been mentioned: I believe it was by Doctor Lucas—and I wish to say right here that I was much pleased with what he said. But he said that in the uric acid that existed there was a factor, and Doctor Ade said because of something else uric acid was produced. So far as we know at the present time, uric acid does not exist in the blood. It has not been found in the blood. We speak metaphorically. If we should believe the discoloration idea we would believe that uric acid was the true cause of all the conditions known as rheumatism, gout, etc. Now we do not have uric acid simply just in these conditions where he claims he finds it. You will find from your patient that you do not have these conditions if you put the patient at rest; neither will you have a trace of uric acid because you have put the patient at rest. I say this of true rheumatic conditions. In those joints perhaps where the conditions are such as to render the patient helpless, in many instances you will find the so-called sulphates or uric acid produced there, but they are there from another cause. Rest is certainly a very important thing in rheumatic conditions. You cannot treat pyorrhea until you put the parts at rest. The main factor in the curing of grippe, the only condition that will bring the patient back to health again, is that he must have rest. And if you go into a discussion of the theory of immunity, and the cause of immunity, you will not be more enlightened on the subject, but you will find that in the conditions of the body there exist in the body a predisposition of a disease before it appears. So there are two factors that are constantly present. There is always the existing cause, and you may call the cause what you may. All pus-producing organisms are not pus-producing at all times. People who are immune today to a certain disease are not immune to-morrow. This is well illustrated by all of the infectious diseases we have talked about.

Doctor McClanahan mentioned the fact that when he was under a nervous strain, or suffering from some condition of high living, or hard work, he suffered more at that time, and his mouth felt differently—that is, it felt different from other times—and this is true of any disease. The person who works hard in a nervous manner is more susceptible to all infectious diseases, and those susceptible conditions are brought about by acquired conditions.

Doctor Kahlo.—I have nothing further to say, except that I do not want to be put down as disregarding constitutional treatment of pyorrhea. I do believe in it, and I do not want to go down as not believing in it.

SUGGESTIONS

A NOVEL METHOD OF MANIPULATING VULCANITE AS A BASE FOR ARTIFICIAL DENTURES.

J. Dunklin Reynolds, Marietta, Ga.

For this purpose we have found the vulcanizable gutta-percha sold by the depots to be the most satisfactory, although we have used ordinary red rubber No. 1, Improved, Bow Spring and others, in the same manner though some were more difficult to manipulate.

The model and bite are procured, and articulated in the usual way, proceeding as follows: The surface of the model to be covered with rubber is coated with a very thin solution of red rubber or vulcanizable gutta-percha dissolved in spirits of turpentine or gasoline, preferring the former as it presents a more tenacious surface; be careful to remove all surplus.

The application of this solution is particularly essential in "green" or fresh models, as the moisture contained in them prevents the close adherence of the rubber to the model.

The rubber is cut of a shape corresponding to that of the model, and warmed thoroughly over an alcohol lamp or Bunsen burner, being careful not to overheat or blister the surface of the rubber, and is pressed to place with the fingers on the model as though you were using wax.

This is built up and shaped properly to receive the teeth, either plain or gum section, as the case may be, which must be absolutely free from wax and clean otherwise.

The teeth are warmed and pressed to their proper articulated position in the rubber with the aid of a wax spatula and the fingers, which constitute all the instruments needed in this procedure.

After having articulated the teeth the irregularities and rough places can be made smooth and equal by filling in with more rub-

ber and working over with a warm spatula, when the case is ready to be "flasked," vulcanized and polished.

With a little experience, when plain teeth are used, pink rubber can be worked into the labial surface of the plate without the common danger of red rubber being forced through to the surface as when the flask is packed and closed under pressure.

This method is particularly applicable for lower dentures, when the ridge is thin and subject to fracture in closing down the flask as ordinarily done; also where it is desirable to insert a metal bar for strengthening purposes; for partial plates, and especially those having clasp attachments, which easily become displaced in closing the flask, for regulating appliances and interdental splints.

For repairing cases the same method can be carried out and shortens the time usually required for such work.

After having seen plates constructed in the above manner that have been in service for more than ten years we can see no difference in fit and wearing qualities from those dentures made under pressure.

We think the fine rugae and undercuts of a model suffer much less interference than when a flask is closed with pressure; therefore a better adaptation of the finished appliance is obtained.—*Items.*

USE OF TRICHLORACETIC ACID.

C. C. Noble, Detroit.

The first subject I will speak of is trichloracetic acid in the treatment of chronic abscess, more especially where we have a fistulous opening. I think we all have had more trouble with this class of cases than with most any other condition we are called upon to treat. After two years' trial I can vouch for the efficacy of the treatment in the great majority of cases. In fistulous openings we have a condition that is impossible to cure unless we get rid of the dead tissue lining the opening, and also destroy the sac at the apex of the root.

Trichloracetic acid is a strong caustic and burns the tissues to a considerable depth, eating away the diseased tissue and sac, giving us a healthy surface that will heal very quickly.

My method of applying it is to take a broach wound with a wisp of cotton dipped in the acid, and pump the acid up through

the opening on the gum. Care should be taken not to allow any of the acid to come in contact with the mucous membrane of the mouth, as it will burn and cause considerable discomfort. We do not get any of this trouble when careful, and the small amount coming through the opening on the gum does not trouble the patient, although it causes a whitening of the tissues immediately surrounding the opening.

After I have injected the acid I seal the tooth and dismiss the patient for two or three days; then remove the stopping and thoroughly wash out with peroxide of hydrogen, and repeat the treatment. Almost all cases will yield to two treatments. I would fill the root and tooth after the second treatment and expect, in a week at least, to find the fistula thoroughly healed.—*Register.*

FUSIBLE METAL.

C. E. Post.

Following is the formula for a fusible metal, fusing at about 165 degrees. This metal will not stick to the gold when heating it to separate the fusible metal from the gold crown in making seamless crowns: Cadmium, 266-10 grammes; bismuth, 94 8-10 grammes; lead, 38 8-10 grammes; tin, 40 grammes. Should a film of metal adhere to the crown, chill the crown in water, when the metal can be peeled off without trouble. The crown should be finally boiled in dilute nitric acid to free it from all contamination.—*Gazette*

QUICK METHOD OF REMAKING A DENTURE.

C. C. Noble, Detroit.

We are often called upon to repair a ruber plate that is so badly broken that it is a question whether a new plate would not be preferable, the question of expense to the patient, or time, being the only objection. The articulation being perfect, an entirely new denture can be made with very little trouble and almost as quickly as we can repair the old one, by the following method: Cement the pieces together as accurately as posible and insert in the lower half of the flask, keeping the plaster even with the edge of the rim of the plate. Oil the surface of the plaster, rubber and teeth, and build more plaster around the outside of the denture

and up even with the occluding edges of the teeth; when this is sufficiently hardened, oil this surface, place the other half of the flask in position, fill with plaster and allow to harden. The flask will separate very easily, leaving the plaster rim around the outside of the teeth, which we next remove and place in the upper part of the flask. By heating the old denture the rubber can be easily removed, leaving the impression of the palatine portion of the mouth perfect. Remove the teeth from the old denture and place in the impressions in the upper part of the flask and proceed to pack the rubber as in any other case. When finished, we have an entirely new denture with comparatively little work.—*Register.*

LARGE RESTORATIONS WITH GOLD INLAY.

F. E. Roach, Chicago.

As a means of anchorage in every large restorations where one or more cusps are involved and the pulp has been destroyed, it is usually advisable to reinforce the anchorage by means of a pin, and in the hollow inlay it is best to fit pin after inlay is made, so that it projects into hollow as far as possible without interfering with the accurate adjustment of the inlay. The pin and inlay are to be cemented to place at the same time, as they will assume their relative positions better than when set separate.

To facilitate the work of cusp and fissure formation in these very large restorations, some of the better stereotype dies may be used to advantage, using only that portion corresponding to portion of tooth to be restored.

If due care is taken throughout the operation the inlay will require no finishing after it is set, and when done with a full conception of the possibilities of the method, no fear need be entertained that perfect margins and artistic results may not be obtained at a great saving of time and energy and with a much greater comfort to patient.—*Ex. American Journal.*

TO CONTROL FLOW OF SOLDER.

C. C. Noble, Detroit.

In bridge-work we often wish to confine the solder to one particular place and not allow it to flow over the adjacent parts. If

you will paint the parts you wish to protect with yellow ochre water color, it will prevent the solder flowing over these parts; whiting will also work the same way, but when the heat is applied the whiting flakes off, which is not the case with the yellow ochre.—*Register.*

PREPARATION FOR GOLD INLAYS.

F. E. Roach, Chicago.

Very often it becomes necessary to extend the cavity into connecting fissures thereby forming narrow necks, which should be made solid in order to have the required strength. This is best accomplished by packing platinum foil into the matrix after it is burnished into the fissure and then fuse pure gold into it making a solid mass, flush with the margins. A very small neck made in this way is very strong and will often afford ample anchorage for a very large inlay.—*Extract American Journal.*

ATTACHING A LUG TO A CLASP FOR VULCANITE WORK.

Oliver Martin, Ottawa, Can.

Fit the clasp and prepare lug the size required. Punch a hole in the lug near the end which comes in contact with the clasp and with one point of the solder tweezers inserted in the hole and the other against the side of the clasps the two can be held in correct relation and attached with solder in a Bunsen flame.—*Review.*

REPLACING A FACING.

A. W. Thornton, Chatham, Can.

In replacing a facing it is often impossible to make openings in the backing large enough for a Bryant "nut." In such cases cut the threads on the pins, pinch the ends together on the lingual surface of the backing and pack amalgam around them. It never fails to hold.—*Review.*

TEMPORARY DRESSINGS.

Doctor Barrellier advocates the use of cotton impregnated with a paste made of oxide of zinc by hydrogen dioxide as a temporary dressing. Such stoppings were found in good condition after one week in mouths unhygienically kept.—*Register.*

SOCIETY

OHIO STATE DENTAL SOCIETY.

The Ohio State Dental Society meets in Columbus, at the Southern Hotel, December 6, 7, and 8, with very bright prospects for an interesting meeting. While it is impossible to give the program at this date, the various committees feel justified in predicting that this will be one of the best meetings of the Society.

Railroad rates on certificate plan will be secured. Mark off these days and meet with us.

H. C. Brown,
Chairman Executive Committee.

AFTERMATH

PERSONAL AND MISCELLANY.

Retired.—Doctor H. M. Hunter, Fremont, Neb., has retired from the practice of dentistry.

Died.—Doctor C. T. Wright, well-known dentist of Arlington, Ky., died September 12th.

Woman Dentist Dead.—Doctor Viola Swift, the first woman dentist to practice in Cincinnati, died September 15th.

Fined for Practicing Without a License.—N. M. West, Bellefontaine, Ohio, was fined $50 and costs for practicing without a license.

Loss by Theft.—Doctor H. L. Davis, Muncie, Ind., suffered the loss of a watch, some gold and other materials by thieves September 16th.

A New Dental School.—A school of dentistry is to be established at Washburn college, Topeka, Kan. It will be in connection with the medical department.

To Be Fire Chief.—It is reported that Dr. W. B. Fahnestock, Cincinnati, is to be appointed chief of the Fire Department in Wyoming, his home village.

Small Percent Passed.—At the recent examination by the West Virginia State Board of Dental Examiners, out of forty-one candidates, only four passed.

Adjudged Insane.—Doctor Selbach, a dentist of Columbus, Ohio, who has figured in many assault cases, has been adjudged insane and sent to the State asylum.

Robbed While Treating Patient.—Doctor Beatty, Jersey City, N. J., while treating an aching tooth for a supposed patient, had his pocket picked of a valuable watch, September 8th. The thief escaped.

The Reason Why.—"Doctor," said the vivacious lady, seventy years young, "I don't think I'll let you do anything with that loose tooth that I came to have filled this morning." "No? Why not?" "Because about half an hour ago I swallowed it."

New Dental Board.—Governor Pardee, California, has appointed the following dentists members of the Examining Board: Dr. E. G. Howard, of Los Angeles; Dr. George A. White, of Santa Barbara; Dr. C. A. Herrick, of Jackson, and Dr. Arthur B. Mayhew, of Palo Alto.

New Dental Society.—Huntsville (Ala.) Dental Society was organized September 16th by the dentists of that city. The membership numbers about a dozen, and the officers are as follows: Dr. W. D. Allen, president; Dr. Inzer B. Wyatt, vice-president; Dr. Frazier L. Adams, secretary and treasurer.

A Dentist Wins Honors.—Dr. S. M. Fowler, Battle Creek, Mich., has won honors as a military commander. Doctor Fowler is captain of the Uniform Rank, K. of P., which won first prize, $700, at the national competition meet in Louisville, Ky., in September. Doctor Fowler won a $100 diamond medal for being the best commander on the field.

Health and Vigor Restorer.—Lemon and orange juice in equal parts with pure water and sweetened to taste makes a health-promoting drink for the gods. Taken daily, with exercise in the open air, deep breathing and regular sleep, one will regain a youthful health and vigor forever unknown to doper of swamp miasma bitters and patent ske-ju-ra pills.—*Exchange.*

Dentist is Sued for $10,000.—Filling the wrong tooth, which afterward caused trouble with her jaw, is the charge made in a suit for $10,000 damages filed in the circuit court against Dr. Ernest Pfennig, a dentist in Chicago, by Leah Minkus, through her father, Jacob Minkus, a tailor. Doctor Pfennig asserts the trouble was due to negligence on the part of his patient.

Married.—Doctor Stratton, Melita, Manitoba, to Miss Gertrude Lewis, of Winnipeg. Dr. H. C. Miller, Grand Island, Neb., to Miss Florence Howell. Dr. J. C. Grant, Athens, Tenn., to Mrs. Nannie B. Spears, Rogersville, Tenn. Dr. B. J. Keehan, Butte, Mont., to Miss Clara McDonnell, Detroit, Mich. Dr. R. H. Kent, Burlington, Kan., to Miss Elva Sanders, August 28th.

Another Dental Society.—The Northwestern Michigan Dental Association has been organized, the membership including dentists in good standing all through this part of the State. Officers elected: Dr. C. C. Bowen, Cadillac, president; Dr. P. H. Penhallegon, Traverse City, vice-president; Dr. C. A. Burbridge, Traverse City, secretary; Dr. Frank Graham, Harbor Springs, treasurer.

Board Case Carried Up.—Ellsworth Glenn, Columbus, Ohio, the man who was fined $50 in the common pleas criminal court for practicing dentistry without a license, has appealed his case to the circuit court, hoping for a reversal of the fine of the lower court. This

will be the second suit of Glenn's pending in that court, as he has for the last year been trying to receive a decision from the courts, forcing the State Board of Dental Examiners to issue him a license, which would immediately do away with his criminal fine.

Complimentary Dinner to Distinguished Foreign Dentists.—On Saturday evening, September 10th, a dinner was partaken of at San Francisco, Cal., under the direction of many dentists of California, in honor of Dr. William J. Younger of Paris, Dr. Robert Good of Chicago, Dr. George Martin of Berlin, and Dr. Mitchell of London. The committee of arrangements was composed of Dr. Clyde Payne, Dr. S. E. Knowles, Dr. J. A. W. Lundborg and Dr. Russell Cool. The music for the occasion was furnished by the Hawaiian band.

National Association of Dental Examiners.—Officers are: President, Thomas J. Barrett, D. D. S., Worcester, Mass.; vice-president of the west, Frank E. Moody, D. D. S., Minneapolis, Minn.; vice-president of the south, F. A. Shotwell, D. D. S., Rogersville, Tenn.; vice-president of the east, C. Stanley Smith, D. D. S., Cincinnati, Ohio; secretary and treasurer, Charles A. Meeker, D. D. S., 29 Fulton street, Newark, N. J. Committee on colleges—Charles C. Chittenden, D. D. S., Madison, Wis.; J. A. Hall, D. D. S, Collinsville, Ala.; James G. Reid, D. D. S., Chicago, Ill. Conference committee—John F. Dowsley, D. D. S., Boston, Mass.; Charles S. Stockton, D. D. S., Newark, N. J.; H. W Campbell, D. D. S., Suffolk, Va.

Dentists Heavily Fined.—Three dentists, convicted of practicing without a license, were given heavy fines by Judge Neal in the superior court, Seattle, Wash., September 7th. In each case the dentists appealed and the constitutionality of the law under which the fines were imposed will now be determined in the supreme court of the State. H. C. Littoy was fined $200, as was also W. Newton. J. Harris, who was found guilty by a jury in the superior court some time ago of practicing without a license, but who was recommended to the mercy of the court by the jury, was only fined $100 and costs. J. W. Brown, the man against whom the dental association is waging particular war, and against whom they secured a conviction, had sentence suspended against him, pending the decision in the supreme court on some similar matters.

Care of the Eyes.—No dentist should look with unprotected eyes into a furnace while baking porcelain or melting gold, as the actinic rays of white light from the furnace are capable of causing chemical irritation of the retina. Even in soldering, the eyes should be protected best by plain flat amber or orange-colored glasses. In Europe and in the eastern States some opticians already manufacture such spectacles, but west of the Rocky Mountains there is but one firm that makes them, as far as I could ascertain. For the same reason the bulbs of electric lamps should be rendered non-actinic by frosting them with a coat of Ruby-Varnish-Bayer, which can be purchased at

the dental depots. Simply pour the varnish over the bulb, holding it over a suitable vessel to catch drippings, which may be poured back into the bottle. When perfectly dry, apply another coat of varnish. The varnish may be removed at any time with a wet cloth or sponge. These means will answer temporarily until such time as the manufacturers produce non-actinic bulbs. It will surely follow, as this is the latest discovery in the field of medico-optical research.—*Dr. X. Dodel.*

City Clinics Established Abroad.—The latest in municipal activity in Europe is the city dentist. United States Consul Liefeld, of Freiburg, Germany, reports that dental statistics gathered in many European cities have revealed such an alarming condition that Germany has decided to adopt combative measures. In all large towns, dental clinics have been founded, consisting as a rule of rooms in one of the central schools. Fully qualified dentists are appointed, but in Stuttgart the work is done voluntarily by the local dentists. Of many thousands of boys and girls examined, from the age of eight to thirteen, only two per cent. had a perfectly healthy set of teeth. During the year 1903 in Darmstadt, 1,376 children were examined and 1,561 teeth were filled, while 1,871 were extracted. In Strassburg 2,666 children were examined, 699 teeth were filled and 2,912 were extracted. Forty per cent. of all teeth examined were bad. The method of work is very simple. The teacher brings his class to the dentist, who examines each mouth quickly and marks on the card which each child has brought whether treatment is necessary. If so, the child must come again on a Saturday. Russia is also joining in the movement, and has already fitted up nine such institutions in St. Petersburg alone.

To Establish a Dominion Dental Council.—The Canadian Dental Association, September 8th, ratified the report of the special committee, submitted by Doctor Cowan, of Regina, and on which all the provinces were represented, to establish a Dominion Dental Council, with authority to grant certificates, good for any province. The standard of examinations was considerably advanced, and provision was made that all dentists less than ten years in practice, desiring such certificates, shall pass an examination before the Dominion Council. The council will be composed of two representatives from each province agreeing to the proposal. So far the plan has been agreed to by dental bodies of Ontario, Manitoba, Northwest Territories, Nova Scotia, New Brunswick, and Prince Edward Island. The report of the nominating committee was adopted. It provided for holding the next biennial meeting in Montreal. The following officers were elected, all but one or two being recommended by the committee: President, Eudore Dubeau, Montreal; vice-president, S. W. McInnes, M. P. P., Brandon; secretary, C. T. Morrison, Montreal; treasurer, W. G. Spaulding, Toronto; registrar, D. K. Thompson, Halifax; executive committee, Doctors Brown, Jos. Nolin and Oliver, Montreal. Representatives from the provinces: Nova Scotia, F. A. Ryan; New Brunswick, F. F. Godson; Quebec, W. F. A. Stevenson; Ontario, Geo.

Hanna; Manitoba, W. F. Taylor; Northwest Territories, W. D. Cowan; Prince Edward Island, F. A. Lefurgey.

Ohio State Examining Board Affairs. -The Ohio State Board of Dental Examiners has adopted more aggressive methods relative to violators of our law, and will push the prosecution of illegal practitioners as fast as possible. Every decision rendered to the date, September 23rd, has been favorable to the Board, and while the task of prosecuting these cases is not a pleasant one, we are not inclined to shirk a duty. Since starting to prepare a list, giving location, of the registered dentists of Ohio, many illegal practitioners have been found, but when their attention was called to their violation, most of them have complied with our law, and we trust all those practicing illegally, will give this matter their prompt attention and save themselves and our Board trouble and expense. Any one holding a certificate bearing the date of May 31, 1892, or later, is a legal practitioner. The preparing of this list required assistance from the profession in each county, and I regret to say it has been very difficult to obtain information or corrected lists from some counties, therefore the delay; but the list will soon be completed and mailed to every dentist whose location could be obtained. Recently we demanded and secured the surrender of a certificate obtained by fraud in 1898. Perjury and forgery was the evidence for such demand. We respectfully request the support of the profession in our efforts to give the violators a wholesome respect for our law.

H. O. Brown, *Secretary.*
Columbus, O.

Dentistry an Ancient Art.—Although the profession of dentistry is commonly supposed to be one of the modern arts, there are evidences showing that it was practiced many centuries ago in widely-separated parts of the world. These discoveries establish the fact that the art is probably as old as any of the learned professions now known. The making of false teeth and the filling of dental cavities is so ancient a trade that it reaches far back beyond the bounds of history, although it has generally been considered as a science of modern origin. The Greeks and the Romans had false teeth, as ancient allusions in the records tell. Perhaps the laughing pearls between the lips of Cleopatra were, after all, "store teeth" and Mark Antony did not know it. The ancients could fill teeth with gold, and far beyond the time of Greece and Rome the science of dentistry is recorded. Recent discoveries show that it extended even into the time of the early Egyptian dynasties. Not long ago mummies were discovered on the banks of the Nile. For 5,000 years or so they had been grinning with false teeth in their sarcophagi. Teeth filled with gold, much as a dentist would fill the aching void in a tooth to-day, have been discovered in some of these mummies. Excavations among the prehistoric cities of Central America have brought to light the fact that the profession of the dentist was one much esteemed and

profitably followed in the days of that mysterious civilization which once existed there. The dentists of those prehistoric American days filled their patients' teeth not with gold but with little discs of bright green jadeite. The skulls of nearly all the people who were buried in costly tombs and who were evidently people of fashion have been found to have teeth in them filed down to a point and set with these little green discs. It is thought that the filling was not put in to stop a prehistoric toothache, but as a matter of ornament. Probably the custom originated at first from the same causes which now induce us to have our teeth filled with gold, but it soon became to be thought ornamental and so became a fashion and badge of rank. The common people, living on coarser food, were supposed to have sound teeth, but the pampered nobles, living on rich and delicate food, had teeth which decayed and so were supposed to require the attention of the dentist. So, though dentistry has no known founder, like medicine, it is an ancient and honorable profession which can dispute with its kindred science for the palm of antiquity.

Patents Recently Granted of Interest to Dentists.—

765537—Dental duct appliance, Frank P. Abbott, New York, N. Y.

766018—Dental clamp, Houston M. Carroll, San Antonio, Texas.

765919—Dental impression cup, Charles L. Gibbs, Philadelphia, Pa.

766586—Apparatus for shaping metal parts in dental work, David N. Booth, New York.

766591—Dental chair, Frank E. Case, Canton, Ohio.

766333—Floss cabinet, Charles E. Emory, Pittsburg, Pa.

766235—Dental articulator, Arthur H. Fleming, Louisburg, N. C.

766693—Dental disk-cutter, James A. Hallett, Des Moines, Iowa.

766247—Tooth-brush, Christian Heilrath, Sacramento, Cal.

Copies of above patents may be obtained for ten cents each by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

DENTAL BOARD EXAMINERS' CONTRIBUTIONS

A GOLD-PORCELAIN BRIDGE FOR THE LOWER JAW.

BY F. R. HENSHAW, D. D. S., MIDDLETOWN, IND.

Member of the Indiana State Board of Dental Examiners.

One of the most serious objections that has been urged against bridge-work has been the employment of gold to form the masticating surfaces, both from an esthetic and utilitarian point of view.

With the more general introduction of the porcelain furnace and the platino-porcelain bridge, this objection has been eliminated—in the practices of those who have the facilities for that kind of work—yet the great rank and file of the profession are not now, nor, in the near future, can be, equipped with the necessary apparatus and technical instruction to enable them to produce this class of work.

For those dentists who are not so equipped—and I am not certain but for the others, also—I can recommend a bridge made according to the following plan:

Given a case in which the right lower second bicuspid and first molar are missing, the first bicuspid broken down, with pulp removed and canal properly filled, second molar normal.

In a clinic given before the Indiana State Dental Association in June, 1903, the writer exhibited a gold-porcelain crown designed for lower bicuspids which will be described here as it is to be used as one of the piers of the bridge.

The first bicuspid being devitalized, there need be no difficulty in cutting away the occlusal portion leaving only about one-half of the crown standing above the gum margin.

This stump should be carefully trimmed in all its circumferences as it is very important that the band fit the root beneath the gingival margin snugly. Dress the occlusal surface slant-

ingly from the linguo-occlusal margin to within a line of the bucco-gingival margin as shown in Fig. 1.

Take a wire measurement and fit a band to the root, swaging on the lingual side and making a lap-seam a little distally of the center of the buccal surface, thus placing the joint entirely out of sight in case the solder should discolor. This band should be of 28 or 29-gauge gold, 22k, and the joint should be flowed with 22k solder, for reasons that will appear later.

Adjust the band to the tooth *in the mouth* and trim to proper length for occlusion, marking inside the band the length of the stump. Remove and trim the occlusal end in the same direction as the end of the root, leaving it about one-tenth of an inch higher than the end of the root.

Contour mesio-distally to form contact points, and with a half-round file countersink the superior border, bringing to a featheredge in a long bevel from within. The band will then resemble Fig. 2.

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Select a saddle-back tooth of proper shade and approximating in circumference the top of band, allowing a little for trimming. Grind this to fit snugly inside the beveled end of band, extending to within a line of the mark showing length of root. Fit band to root with porcelain in place and by grinding with small stones, get an absolutely correct articulation. Remove, back porcelain with pure gold about 36-gauge, bend pins down flat allowing the ends to just reach the sides of the band and the backing to come in contact with it all around, cover the porcelain with asbestos fiber (dry) held in place by binding wire, flux, hold in Bunsen flame—porcelain down—and solder, using 20k solder. The feather edges may be now burnished to the porcelain and the crown is ready to finish in the ordinary way. The finished crown will have the appearance of Fig. 3.

The molar abutment is to be prepared in the ordinary way for a plain gold-cap crown, which may be constructed in any

way preferred though, if the occlusion be heavy, a solid cusp should be employed.

Having the abutments finished, an impression is taken and a cast made of "sump" or other good fire-proof material, with the crowns in place. After mounting on the articulator, select two ordinary diatoric rubber teeth, bicuspid and molar, of proper shade and broad enough mesio-distally to a little more than fill the space to be bridged. Grind so that mesial, distal, buccal and lingual walls will be parallel and fit to space, allowing for thickness of gold, 28-gauge in each space.

The open ends should then be ground off both from the buccal and lingual sides, leaving the base triangular in shape, as in Fig. 4, with the apex over the ridge. Now take a wire measurement of each at its middle and make a band of 28-gauge gold to closely fit it. These bands should be trimmed so that the upper lingual border will come well up to the margin of the porcelain, cutting away at the buccal to expose as much of porcelain as desired. The bands should be trimmed with the same triangular bases as were the porcelains and with the porcelains in place, fitted to their proper place and the correct articulation obtained. Remove the porcelains from bands and on the open base of each, solder a plate of 28-gauge, 22k gold, using 20k solder. Solder from inside, using a quantity of solder and allowing it to flow along the apex of the triangular plate, thus adding much to the strength of the piece. After soldering, trim the boxes to the desired shape and replace the porcelains. The finished dummy is shown in Fig. 5.

Mount on model and again adjust to correct articulation. Remove carefully from wax, so that the impression of the boxes will be exact, remove porcelains (which may be found rather difficult if they are accurately fitted and may often most easily be done by attaching a small pine stick to the cusp by sticky wax, thus giving a direct pull) replace boxes in their former position, invest (in pouring the investment, be very careful to completely fill the boxes) and solder the joints in the usual way from below, using 18k solder. Finish and polish as in any case, first dressing the free edges of the boxes to a feather edge to admit of burnishing.

The case is now ready for the final adjustment of the porcelains. Carefully clean and dry the interior of the boxes and

in like manner prepare the porcelains. Mix some good cement to a crown-setting consistency and fill boxes, then with a small block of wood in your fingers, force the porcelains home. Remove surplus and burnish all free edges. When the cement is sufficiently hard, the piece may be tried in the mouth and any defects in articulation readily remedied with a carborundum. The finished piece will have the appearance as in Fig. 6.

Fig. 6.

I believe this piece of work to be stronger than any other combination gold and porcelain bridge, and much stronger and safer than a platino-porcelain bridge, over which it has the additional advantage of easy repair (if such an inconveivable thing as the loss of one of its porcelains should happen).

This same method of preparing dummies may be employed in upper dentures where the tooth to be supplied is a first or second molar.

DISEASED ANTRUM: SYMPTOMS, CAUSES, DIAGNOSIS AND TREATMENT.

BY DR W. E. MINGHINI, MARTINSBURG, W. VA.

Member of the West Virginia State Board of Dental Examiners.

I will not take up time or space to enter into a lengthy description of this important cavity, as I presume all dentists are familiar with its location and general characteristics; but I do wish to impress upon you one fact in regard to the antrum, viz.: its lack of regularity of form. In some subjects we may find it terminating over the roots of the second bicuspids, while in others it may extend to the lateral, or central. It is well to bear this fact in mind when drilling to secure an opening into this cavity.

Diseased antrum is of special interest to us as dental surgeons, because of the fact that nine-tenths of these cases being caused, either directly or indirectly, by carious and abscessed teeth, and that they come under our notice before that of a surgeon, as a usual thing; such being the case, every dentist worthy the degree of Doctor of Dental Surgery, should be perfectly familiar with the antrum in both a healthy and diseased state, and if a case is brought to our notice which needs surgical attention, we should be able to treat it in a scientific manner, and as well or better, than the best surgeon in the land.

Now disease of the maxillary sinus is essentially a disease of the adult, as this cavity is not formed until after early childhood has been passed, but the cavity once formed, there are many causes which may tend to bring about a diseased condition—principal among these, as before stated, being carious and abscessed teeth. It is a well-known anatomical fact that the roots of the first and second molars often project into the cavity, forming cones covered only by a thin septum of bone, so it can very readily be understood how an abscess formed at the roots of these teeth may and often does penetrate and discharge into the antrum, thus communicating and causing a diseased condition. It must not be inferred from this that the abscessed roots of teeth more remote from the antrum are not often the cause of trouble in this locality, for such is the case, as pus always follows the course of least resistance, and by this law may often find its way into the antrum from a distance. The next most important cause

of antral disorder is a communication of inflamed conditions from the air passages, the mucous membrane being continuous with the Schneiderein membrane lining these air passages. It will therefore be liable to the same diseases and be materially affected by the conditions of the air passages; thus a nasal catarrh may induce a chronic antral disorder. Among the less frequent causes may be mentioned traumatism, from unscientific extraction, or from a blow; presence of foreign bodies; cancerous, tubercular and syphilitic affections.

When acute empyema of the antrum has been brought about by any of the foreign causes, we may diagnose the case by the following symptoms: Usually the first manifestation of disease is a discharge of pus from the nostril of the affected side. This discharge is nearly always light yellow in color with a slight or even pronounced disagreeable odor. When using this as a means of diagnosis we should spray the nasal cavity with four per cent solution of cocaine, which will shrink the soft tissues and admit of a more ready inspection of the source from where the pus makes its escape, thus eliminating the possibility of mistaking nasal catarrh, empyema of the frontal sinus, or empyema of the ethmoidal cells, for antrum trouble.

Just here with propriety I think I may ask leave to call your attention to the complications of empyema of the antrum by the inflammation extending to the frontal, ethmoid and sphenoidal sinuses. Either one or all of these may be involved with the antrum, thus rendering the diagnosis obscure, and prognosis unfavorable. To return to the symptoms: Accompanying the discharge there is often a dull, throbbing deep-seated pain within the cheek just below the orbit, also frontal, supraorbital or even general headache. Frequently there are fever, sweats and malaise, also tenderness of teeth on percussion, and of palate. The cheek is usually feverish, swollen and tender to the touch. In cases where the pus is confined, the floor of the orbit may be pushed upward, giving the eye the appearance of being about to start from the socket.

There is an intense boring pain within the cheek often accompanied by pain in the head, neck, and other parts of the face, and there may be bulging of the nasal wall and hard palate. Fistula may open through the cheek along the side of a

tooth, through the hard palate, into the nasal or orbital cavity or above the alveolar arch.

In treating a diseased antrum we should remove or correct the cause. If the inflammation is not severe and no pus is present, the trouble may subside without surgical interference; if the inflammation is suppurative and the cavity is engorged we should at once open to secure drainage and a means of access for antiseptic treatment. The antrum is best opened by means of the dental engine, drilling through the socket of the first molar or second bicuspid. The opening should be not less than one quarter of an inch in diameter, and we should fear getting it too small rather than too large, as it is very important that we secure proper drainage.

To do this it is essential that the opening be made at the lowest point, which is usually just anterior to the first molar, and that the opening be kept open. After securing access to the antrum, we should first wash it out freely with warm water and enzymol, equal parts, followed by a wash of well-diluted perozide of hydrogen. If the peroxide be used full strength it may cause serious trouble, on account of the immense quantity of gas generated when it comes in contact with pus. If the opening is of a sufficient calibre and made at the lowest point, very little treatment in uncomplicated cases will be necessary, other than a daily washing out of the cavity with an antiseptic non-irritating wash. For this purpose I can recommend nothing better than a two or three per cent. solution protargol. This is comparatively a new remedy, but it has already became widely known on account of its prompt and effective action on inflamed mucous membrane. In case of profuse discharge and ulcerated mucous membrane, a solution of zinc chloride may be used. When there is a great deal of fetor, a solution of potassium permanganate may be found useful; ten grains to the ounce of water. In conclusion, I wish to mention two cases which I treated and which I think are of unusual interest.

The first, Miss H—., sixteen years of age, who came to me suffering intensely, and with every symptom of acute empyema of the antrum. The peculiarity of this case is that after the most careful examination I could find no cause whatever for such a condition. The teeth were all sound and healthy, and no history of any infectious disease. Why did this condition exist?

Why does the nerve in the tongue respond to a sensation, and produce on the mind the sense of taste? What is it that enables the nerve in the nose to perform its discriminative function? We do not answer.

There was a discharge from the nostril of the affected side, but this I thought came from the antrum and not from a catarrhal condition, which subsequently proved to be the case. I determined to open, which I did, through the socket of the first molar after extracting the same, and gaining access to the antrum I found it containing a large amount of thick yellow pus of a very disagreeable odor. There was considerable necrosis, and I was compelled to remove a large portion of the superior maxillary, together with all the teeth from bicuspid back, which resulted in a temporary deformity of the face of the affected side; however, after careful treating for several months, new tissue began to form and now the contour of the face is perfect.

The other case, Mr. S—.. who came to me suffering very much with pain in the cheek, head and jaw. I diagnosed it as empyema of the antrum and I opened it as in the other case and found the same conditions, with much more necrosis. After removing the dead bone and curetting, wiping it out with pure carbolic acid and then grain alcohol. After treating it for some time and finding it would not yield to treatment, I determined on a second operation at which time I removed nearly the entire floor of the antrum. After careful examination I found pus making its appearance in the antrum near the apex, and at once concluded that the infundibulum discharged into the antrum; this established the fact in my mind, that there was empyema of the frontal sinus, and instead of discharging into the naries of the nose it was running through the infundibulum. I deemed it necessary to operate for same. In order that he might have necessary attention and nursing I took him to the University of Maryland Hospital where he was operated on by Doctor Dinslow, who opened the frontal sinus and found it badly diseased. It was the largest cavity of the kind I ever saw. He rallied from the operation and seemed to improve and in six weeks he was discharged, but died the morning after he reached home.

REGULAR CONTRIBUTIONS

THE RELATION OF COLOR AND STRENGTH OF PORCELAIN TO THE ACTUAL BAKING TEMPERATURE.*

BY WESTON A. PRICE, D. D. S., M. E., CLEVELAND, OHIO.

Professor of Electrology and Radiology, Western Reserve University, Dental Department, Cleveland, Ohio.

The most difficult and trying part of porcelain work to-day is, and always has been, to produce with exactness just the shades desired and to produce uniform effects with the same materials. Since these difficulties are due almost entirely to the variations in shade produced by a difference of only a few degrees of temperature in baking, the problem has been exceedingly difficult. However, I believe I am able to offer a solution, and which I trust the results and tests we will here present will satisfactorily demonstrate. First, let us understand that the fault is not in the materials used, but in the inability to manipulate it uniformly. We do not produce the same results with the same shades because we do not bake them at exactly the same temperature, and we do not produce a maximum or uniform strength because of the difference in the quality of the porcelain as well as shade produced by relatively a small difference in baking temperature.

I have made very extended tests of the difference in both the color and strength of a number of different makes of porcelains and of different shades of the same make, and find these variations in both strength and color running through them all and fortunately also find that both the color and strength are practically uniform for bakes made at exactly the same temperature.

*Read before the Odontographic Society, Western Pennsylvania, at Pittsburg, Pa.

We will now take these results up in the order of different makes starting with Brewster enamel body. The buttons were all made in the same mold with as nearly as possible the same manipulation, and the shape of the mold was meant to produce such a surface and form as would somewhat represent a large contour inlay. The crushing strengths were tested very carefully with the testing machines at Case School of Applied Science. Using the glaze and color and strength produced by the temperature indicated on our pyrometer as a standard, and calling the crushing strength of that as one hundred per cent we find that Brewster enamel body (shade G), baking at fifty degrees Centigrade has less than the standard of one thousand one hundred and forty degrees Centigrade or two thousand and fifty degrees Fahrenheit (the pyrometer having both scales), is considerably darker and has only eighty-six per cent as much strength, as at the proper temperature, and when baked at one hundred degrees less is still darker and had only seventy-three per cent the strength. When baking at fifty degrees above the standard temperature, the color was nearly baked out and the strength was only seventy-three per cent, and when baked at one hundred degrees above the standard temperature, the color was completely gone and the strength reduced to fifty-six per cent. In all of these cases not less than two crushing tests were made and their average taken.

This card I will pass around has all these buttons baked on to it and the temperature of baking and strength beside them. You will notice the shade varies from very dark to no color or white, the color all being baked out.

With shade N of Brewster enamel body, dark brown, the color changes were still more extreme, as you will see from this card. The tests of Brewster's foundation body show much the same changes of shade, though not so extreme, but the crushing strength varied even more when baked at fifty degrees too low the strength was sixty per cent, and at one hundred degrees too low was only fifty per cent. At fifty degrees too high the strength was ninety per cent and at one hundred degrees too high the strength was eighty-six per cent.

You will see from either of these two cards that all the shades of brown, from the darkest to pure white, may be produced with just one bottle by sacrificing some of the strength.

Kindly notice also that the shrinkage is nearly in proportion to the temperature throughout.

The tests with White's inlay porcelain show these same very marked changes in color, over-baking rapidly takes out the color which is practically all baked out before one hundred degrees too high is reached. The crushing strengths were at fifty degrees too low ninety per cent; at one hundred degrees too low, eighty per cent; at fifty degrees too high, ninety-two per cent, and at one hundred degrees too high, seventy-three per cent.

With Close's body the variations were even more marked as you will see. At fifty degrees too high the color is nearly all gone, and at one hundred degrees too high is entirely gone and the button has fallen like a griddle-cake, showing this body even more exacting regarding temperature than the preceding ones. The crushing strength of the buttons of this body baked at fifty degrees too low was ninety-three per cent, and at one hundred degrees too low, seventy-seven per cent. At fifty too high, seventy-eight per cent, and at one hundred too high only thirty-four per cent.

The Jenkins body on this card shares this same marked tendency to flow as the Close, and much more contraction though but little change in the color for this amount of over-fusing. Its greatest variation is in its strength, being one of the strongest we have when baked at its proper temperature, and the weakest with the same variation of over and under-baking. As you will see, this body requires a very accurate baking temperature, as so many of you have found from sad experience. At fifty degrees too low the strength was twenty-five per cent and at one hundred degrees too low was only eight per cent. These two were scarcely biscuited. At fifty degrees too high crushed at eighty-nine per cent and at one hundred degrees too high at thirty-nine per cent. You will notice that at only fifty degrees too high it shows a marked tendency to spheroid, and at one hundred degrees to high the cone has taken a shape as round as a split pea. No furnace, gas or electric, can fuse this body to compare with the pyrometer furnace for definiteness of result.

In all these cases the buttons that were crushed were baked with these, which I have exhibited on the cards.

To show you the difference in shade that only a few degrees will make, I have baked a series in steps of ten degrees too high

and too low, which shows the gradual but constant change in color produced by such small variations.

Doubtless some will say "but I think I do not have such variations of strength and color." To test this I sent buttons of the same Brewster's enamel body to a number of porcelain workers, telling them the color and kind, and which all of them were using. I stated that I wanted a glaze finish retaining the color and was very much surprised to see the very wide variety in results which you will observe on this card. It is as great almost as any of the sets I have shown you. One could scarcely believe that they were all made from the same bottle, which they certainly were.

This much is certain, that to get even relatively uniform color we must bake within a few degrees of the same temperature. How closely can we work by any of the methods heretofore available?

First, let us consider the time method of waiting a certain time on each post. The basis of this method is that a certain amount of heat will raise the temperature of a given mass a certain amount in a given time. This is true provided the mass is at the same temperature each time to start with and the conditions of radiation remain the same. But this is just where the trouble comes in, for every time a furnace is heated, if it does not have time to cool back to the temperature of the room, it will contain throughout its mass more or less total heat units as compared with every other time it is heated, depending upon the time between the heats, which determines the amount of this heat lost by radiation. Many operators have told me that by turning the switch on just to a certain button for five or ten minutes and then go to a certain other button for say two minutes and a certain other for two minutes they got the exact temperature. There is only one condition under which they can, and that is to wait each time not only until the muffle has cooled down to that temperature from which that given series of time on buttons would come to the proper temperature but also the material about the muffle which radiates the heat from the muffle in proportion not to the temperature of the muffle but the difference in its and their temperature. When the mass about a muffle has its average temperature raised say one hundred degrees, the muffle will come to a given temperature in less time than before and with each succeeding heat of the furnace, without allowing it to en-

tirely cool down, the average temperature of the mass around the muffle is increased and does not change rapidly, requiring an hour or more to cool to relatively a constant relation to the muffle. Hence, for bakes made within short periods of varying duration the temperature of the muffle with a given time on each step will not have a constant temperature and certainly not within so short a range as is required to produce exactly a certain shade. For example, see the following reading of the exact temperature of the muffle with successive heatings of varying duration between them. And since in the furnace used the mass of material producing the heat, viz: the platinum wire, is relatively large in proportion to the surrounding mass as compared with most furnaces, this can be taken as a fair example of what any furnace will do with these same ratios of time. The lever of the rheostat was put on the first step for five minutes to let the furnace heat up, then it was put on the fourth step for two minutes and then on the first step for two minutes, then on the fourth step two minutes and fifty seconds to heat the furnace up thoroughly as we would suppose. The temperature went to two thousand two hundred and ten degrees Fahrenheit, the fusing point of Brewster's foundation body. Note that it took one minute and fifty seconds on the ninth step to go to the fusing point of Brewster's enamel, two thousand and eighty degrees, and one minute more to go to Brewster's body. For the second heat the lever was put on the first step for two minutes, then on the fourth step two minutes, on the eighth step one minute and on the ninth one minute, at which time it just reached the proper baking point for Brewster's enamel as shown both by the pyrometer and by the bake on this card. You would think that after heating the furnace up first very hot, away above the temperature required, that the temperature for successive bakes would not vary much from this second heat, provided we use at least relatively even time between bakes. For the third heat and second bake the lever was put on the fourth step for two minutes, on the eighth step one minute, and on the ninth step one minute, the same as before, and this button marked "second bake" shows that the temperature was too high. The pyrometer showed that the temperature was sixty degrees Fahrenheit too high and that the muffle reached the proper temperature in forty-five seconds on the ninth step, instead of one minute as before. For the fourth heat and third

bake the heat was turned down to fourth step again and for two and one-half minutes, and then on each the eighth and ninth steps for each one minute again, and the bake was away over as shown by this sample. The pyrometer showed that the temperature was one hundred and thirty degrees too high and that the proper time on the ninth step should have been thirty seconds. The next time we waited still longer back on the fourth step, three and one-half minutes, then proceeded as before on the eighth and ninth, each one minute, and the button was still more over-baked as you see by the button marked fourth bake, the temperature being one hundred and sixty degrees Fahrenheit too high and the proper time in the ninth step should have been twenty-five seconds instead of one minute. To abbreviate, remember that the time on the eighth and ninth steps remained the same, viz. one minute, and the time between bakes on the fourth step was varied, but note that as the furnace got more and more heated through the waits or fourth step effected it relatively less. For the sixth heat and fifth bake, waited on fourth step three and one-half minutes; over-bake, two hundred degrees Fahrenheit; proper time on ninth step would have been seventeen seconds. Seventh heat and sixth bake, waited on fourth seven minutes; over-bake two hundred and ten degrees too high, and correct time on ninth step fifteen seconds. Eighth heat and seventh bake, waited on fourth step nine minutes. You see much longer and over-bake was reduced to one hundred and seventy degrees and the correct time on the ninth step should have been thirty-five seconds. For the ninth heat and eighth bake we waited on the fourth step only two minutes and the over-bake was two hundred and seventy degrees and the correct time on ninth step should have been only eleven seconds, and for the tenth heat and ninth bake, waiting on the fourth step thirteen and one-half minutes and the overbake was only one hundred degrees, and the correct time on the ninth should have been thirty-five seconds. Notice that the result depends very much upon the length of time between bakes and that even this relation changes continually as the number of heats is increased. I am very sure that all that is necessary to demonstrate this point conclusively to any one is to try it with an accurate temperature-recording device like this. The increasing difference in the color and shape of these buttons, all made from the same bottle of

Brewster's enamel and formed in the same moulds, should convince most any one that unless very long waits are made between heats, and these waits always of the same duration, there cannot be a certain time on each step that would produce the same temperature in the muffle. We took the second heat in this case as a standard. What heat of all of those would have been accurate for them all or even any three of them? Not any; they are all different.

The next best method is a definite time from pure gold. While this method is not nearly accurate, it is better than the former, because it shortens the field of error which comes from the same source as in the last method In this series of heats the furnace was cooled down each time to eleven hundred degrees Fahrenheit, six hundred degrees Centigrade, by blowing into it. For the first heat the time required between the melting point of gold and the proper fusing point of Brewster's enamel body was forty seconds, and between gold and Brewster's foundation body one minute and forty seconds.

2nd heat, time to Brewster's enamel, 20 seconds, to Brewster's foundation body, 60 seconds.

3rd heat, time to Brewster's enamel, 18 seconds, to Brewster's foundation body, 54 seconds.

4th heat, time to Brewster's enamel 15 seconds, to Brewster's foundation body, 44 seconds.

5th heat, time to Brewster's enamel, 18 seconds, to Brewster's foundation body, 55 seconds.

6th heat, time to Brewster's enamel, 17 seconds, to Brewster's foundation body, 53 seconds.

7th heat, time to Brewster's enamel 15 seconds, to Brewster's foundation body, 44 seconds.

8th heat, time to Brewster's enamel, 14 seconds, to Brewster's foundation body, 40 seconds.

9th heat, time to Brewster's enamel, 10 seconds, to Brewster's foundation body, 30 seconds.

You see, no one of these durations of time above gold would have done exactly for any other bakes, in fact there is a very big difference in the buttons produced. If we had taken as the standard the second heat, the eighth heat was seventy degrees too high for Brewster's enamel body and ninety degrees too high for Brewster's foundation body. And for the ninth heat one hundred degrees too high for Brewster's enamel body and one hundred and ten degrees too high for Brewster's foundation body.

Another method that is used is to train the eye to the appearance of the glaze, which is not constant for different shapes of surfaces and colors or for different conditions of the eyes. The range of error from this method must be considerable as shown by the set of buttons made from the same bottle by nine different dentists and most of them used the glaze test. The range goes from the darkest brown to a nearly chalk white, but were supposed to be alike.

Still another method used is to judge the temperature of the furnace by its color. We all know that what appears to the eye a red heat will depend entirely upon the intensity of the light in which it is viewed and the condition of our eyes. For example, if you are annealing a piece of gold at night in a dark room in a Bunsen flame, the temperature at which it looks red is about thirteen hundred degrees Fahrenheit or seven hundred degrees Centrigrade, and doing the same in the midday in a bright light the temperature is about nineteen hundred degrees Fahrenheit or one thousand and fifty degrees Centigrade, more than half as much again as before. Now, how can any one allow for the stages of light between, occasioned by a passing cloud or a smoky day such as you have here in Pittsburg? I cannot see how it is possible and I have tried several operators who claimed they could, but the variation they made was always very large.

There is still one other method used which is to turn the current on the top notch and leave it there until you get the inlay or crown done and plunge each piece into the white-hot muffle after drying and regulate the result by the time the piece is left in the muffle. I asked an operator who used this method, how he allowed for the difference in the fusing point of Brewster's foundation body and Brewster's enamel body. He stated that he had no allowance except the time.

Gentlemen, when we consider the absolute lack of exactness in all our methods of manipulating porcelain, the wonder is, not that so much of porcelain work has been satisfactory, but that so much has been even as creditable as it has.

There are some fundamental principles underlying the fusing of porcelain that have not been recognized, and certainly not complied with, viz: to produce a definite color we must bake at a definite temperature for a definite time and that the temperature of different parts of the same piece of porcelain we are baking

are not the same temperature if we are using a constantly increasing temperature, which we do by all the methods heretofore detailed. When we heat an inlay or crown, the interior of it is heated by the exterior and the more exposed parts are ten to fifty degrees hotter than the less exposed parts if the heat is constantly increasing. By this means the color is baked out more in those more exposed places like the tip of a crown or edge of a large inlay. Besides this unevenness of color we have a different degree of contraction from the different degrees of fuse which makes a much more friable piece besides tending to change its shape. We even see a blistering sometimes on exposed cusps of crowns. These defects are all entirely prevented by bringing the piece to exactly the proper temperature and holding it there until the entire mass comes to that temperature without allowing the more exposed parts to increase as is the universal custom by all the methods described. For example, here is a card with three large cones of Brewster's enamel body, each having large base like the mass of a crown, and tapering to a thin edge. In the first, the universal method of baking with a constantly increasing heat or the same thing, placing into a hot muffle as some do for a given time. It was taken out just when the exposed parts were fusing, and you see that while the top and edges are fully glazed, the base and less exposed parts are not starting to glaze.

The next cone on this card shows another cone just the same shape but left in under the same conditions until the base and less exposed part sare fused and the result is as you see that the color is not the same by several degrees at the exposed edges as at the base, because these parts were of necessity hotter and the color was baked out with this method of a constantly increasing current.

The third button is similar in size and all made from the same bottle, but in this the thin knife-edges of the exposed top and side of the cone have precisely the same color as the base in contrast with the other two.

The reason is that it was properly baked by stopping the rise of temperature by turning back the rheostat at precisely the right point by means of the pyrometer and holding the temperature of the muffle at just that point until the entire mass of the porcelain had come to that temperature. The difference is

very marked and I am sure this can only be done by such an instrument as this that I have designed. A small inlay will fuse evenly through if held at the proper temperature fifteen seconds where a large crown will require forty-five seconds to one minute at that temperature. The time we will judge by the size of our piece and leaving it a little too long at just the fusing temperature will have very little effect on the color, where even ten or twenty degrees too high would. With this rheostat you can control the current with great accuracy, the error not amounting to more than two or three degrees where with the ordinary methods with the ordinary furnaces the error will average more nearly one hundred degrees. There is little danger of burning out a muffle when you can watch your temperature so accurately.

There are several other improvements in this furnace, like the proportion of the size of the steps of the rheostat to the total resistance left and the capacity for rapid heating and cooling of the muffle that I would like to have brought out the great advantage of, but I have already kept you too long and will refer you to other papers for.

RECENT DEVELOPMENT IN PORCELAIN DENTAL WORK.

BY DR. C. C. TAGGART, PITTSBURG, PA.

The whole technic of porcelain in our profession with the exception of continuous gum work, is of so recent a date that it is difficult to distinguish between the "old and the new" in its development.

Inquiry among a number of our most proficient workers in porcelain as to what they think the greatest advancement made during the past year or two only elicited suggestions as to where it may best be used and where its use is not advisable—the advantage of low-fusing over high-fusing and vice versa—and again as to the methods of retention.

With such meager suggestions, it would almost seem that to do justice to this interesting work, a review of the subject from its infancy should be given, but we are persuaded that a

*Read before the Lake Erie Dental Society, 1904.

large proportion of the members of our profession who are assembled here to-day, have good knowledge of the primary stage with the working of porcelain, hence the effort of this paper will be to give a resume of what, to the writer, has seemed advancement in porcelain during the past year, or year and a half.

In the manufacture of materials there has been no decided change so far as we are informed. With the score of different makes now on the market, with the fusing points ranging from 1550 degrees F. to 2625 degrees F., it would seem as though any one could make a satisfactory choice.

Retention is probably the weakest link in a chain that represents the different stages in the work necessary to the completion of a porcelain inlay. In the greater number of cases, separation is essential in order to secure for retentive purposes the proximal tooth, which, when it returns to its normal position will lock or wedge the inlay to place. If this is done and the inlay should loosen, it cannot come out and thus be lost. The time consumed in resetting an inlay is nothing compared with the time it takes to make a new one. The margins of cavities for porcelain should be smooth and well defined. The porcelain-inlay burs, the small gem cavity-trimmers and the Arkansas stones for polishing the cavities are of great assistance in the work of preparation for the reception of the porcelain. The gem cavity-trimmers are made for the right angle, as well as the straight hand-piece. This is of especial assistance in shaping cavities on the lingual surface of anterior teeth. If the burs referred to are used, sharp angles can be secured that will greatly assist in the retention of the inlay. There is probably no better way to secure the sharp angles in a matrix than by the swaging system. Many cavities are shaped like a saucer and the inlay is expected to be retained by the cement. This should be condemned as bad practice. An angular inlay will have retentive qualities not found in those with rounded surfaces. In my own practice all cavities in the anterior teeth are opened on the lingual surface. The value of this method is, that as the pressure of the lower anterior teeth is upward and outward and as the labial part of the tooth is standing, the inlay cannot be pushed out labially.

For roughening the cavity surface of inlays, nothing has been found of greater value than etching by means of hydrofluoric acid.

Even though the inlay should be large enough to groove or cut with stones, the surface near the edges can only be safely prepared for adhesion of cement by etching with this acid.

If the hydrofluoric acid does not work quickly, teasing or agitating it on the inlay with a small wooden stick (washing off and renewing the acid several times) will hasten the etching.

In ten or fifteen minutes more success will be obtained, if you keep continuously at it, than would be accomplished in an hour by simply allowing the acid to remain quietly on the surface to be etched.

The pressure in setting an inlay is accomplished in a simple and satisfactory manner by wrapping the tooth and inlay round and round with heavy silk ligature, preferably not waxed, thus allowing the strands to separate until pressure is brought to bear upon every exposed portion of the inlay. This ligature should be in place at least several hours, it, and the inlay, having been covered with sandarac varnish, or, if more convenient for patient and operator, it may remain until the next day. Articles glued under pressure give the best results, and the same principle applies to the setting of inlays in cement.

Permit me to caution you in the use of the hydrofluoric acid —apply it to your inlay with a wooden toothpick and do not attempt to drop it on the inlay, especially if holding in your hand.

Failure to use this precaution, on the part of one of our profession, led the operator to get it on his thumb. It worked through from one side to the other, destroying the nail and caused him much suffering, as well as loss of time from his chair.

If this caution will save some one a similar experience we will feel justified in speaking of it in this paper, though it may seem to be out of place.

We would urge also the thorough removal of all traces of hydrofluoric acid from the inlay. Ordinary washing will not do, for after what might be considered a perfect cleansing, if the inlay is laid aside for a day, a white dust will be found over the etched surface, causing inlays to loosen and come out because the necessary care in cleansing is not observed.

We will welcome the day when the manufacturers give us a cement which is perfect in retentive, as well as transluscent, qualities.

The Harvard special seems to possess superior qualities as a retentive agent, the setting being quicker than the ordinary Harvard cement.

It is generally conceded that the porosity in porcelain, which we usually find in large pieces, is due either to over-fusing or to gold used in soldering, as in continuous gum cases, bridges or crowns.

In the latter case we must be careful to use the least amount of pure gold necessary to solder, and *that,* if possible, on a surface where the porcelain does not touch it. The theory is, that the blow holes are produced by the vaporizing of the gold.

In the *International Dental Journal* for May we find a description by Dr. H. W. Gillett, of Doctor Spaulding's porcelain jacket crown, and while we have not had a case adapted to a trial of it, the description given is so complete as to lead us to believe it an improvement over other jacket crowns.

In Doctor Gillett's paper he assumed dealing with a deformed superior cuspid, defects which call for improvement.

We frequently meet this in a lateral, just a peg, as it were, protruding from the gum. He describes it as follows: The first step, to take a wire measurement of the circumference of the tooth at gum margin.

Second, make the crown of tooth conical in shape, giving a distinct shoulder at or just under the gum margin and to shorten it.

Third, cut a piece of matrix platinum in the shape of a trapezoid, the base line being same length as the wire measurement in first step.

Fourth, unite edges of this piece with minimum amount of pure gold, forming a truncated cone. Put this over tooth, having edges go above shoulder left at gum margin and with dentimeter twist a soft wire around the matrix just below the shoulder and with suitable pliers begin to draw the surplus platinum to the mesial and distal sides in two flattened wings and also over the end of the tooth.

Clip off most of the surplus at the end, leaving a little for a handle till the fitting is nearly done and fold over the surplus at the sides, cutting off part of it first if there is much excess.

Burnish the matrix accurately and smooth to tooth.

Fifth, select a rubber tooth of suitable color and size and

hollow out the tip of the tooth, not disturbing the shoulder and enamel surface of the palatal side of the tooth. This shoulder is a very important aid in the further work.

Sixth, wax this to matrix, with latter in correct position on tooth; remove carefully; grip with suitable pliers, one jaw inside the matrix and other engaging corresponding point on the labial side of the facing. Remove wax, place body on one side near tip and jar it carefully through till it appears on other side. Then build it round the top of the cone, set on end in furnace and fuse.

It is essential during the first bake to keep the body from the shoulder in the matrix.

Seventh, place the piece in position on the tooth and carefully perfect the fit of the matrix at the shoulder.

Eighth, apply body and fuse to finish.

Ninth, remove matrix and set in suitable cement.

Without doubt the greatest advancement made recently is the furnace and pyrometer invented by one favorably known to you all, Dr. Weston A. Price, of Cleveland, Ohio.

In his electrical work Doctor Price is a genius, and we may indeed feel honored that one of our profession has given to us so perfect an instrument.

By means of this furnace we know that many of our failures in shade, as well as strength of porcelain, were due to improper fusing, either too high or too low.

In using the gold fusing method, Doctor Price has said that by watching the appearance of the inlay, and the glow of the furnace, he could not, on an average tell the actual temperature within one hundred degrees. Others whom he had try the same method, varied from 50 degrees to 200 degrees F., and even more.

Taking the crushing strength of a button baked at proper temperatures as one hundred (100) per cent., Doctor Price gives the following tests:

	Strength.
Brewster's body baked 186 degrees F. too low	47%
Brewster's body baked 186 degrees F. too high	54%
Brewster's enamel baked 186 degrees F. too low	42%
Brewster's enamel baked 186 degrees F. too high	52%
Jenkins' enamel baked 186 degrees F. too low	68%
Jenkins' enamel baked 186 degrees F. too high	81%

Doctor LeCron, of St. Louis, in tests made found that Close's and White's inlay bodies, with a maximum strength baked at 2288 degrees and 2254 degrees F. of 5650 pounds and 3800 pounds respectively, crushed at 300 to 500 pounds less weight when under-fused only 36 degrees F., and gave way at 1500 to 2300 pounds less when fused 72 degrees F. too high.

Jenkins' highest test at 1580 degrees F., crushed at 3330 pounds, and at temperature of 1544 F. crushed at 2910 pounds and at 2616 degrees F. crushed at 1700 pounds.

Taking these figures as facts, and we have no reason to doubt them, on the contrary we must agree with both of these experts, that many failures in porcelain are due to improper baking, either too high or too low.

When the manufacturers give us the temperature at which to fuse their porcelain to obtain the maximum strength and retain the shade, we will have one of the most difficult and perplexing problems very much simplified.

Another advantage of this furnace is, that an assistant can bake the inlays as well as one who is expert in porcelain, or the furnace may be in your laboratory and the pyrometer where it can be watched from your chair in the operating room.

To quote another: With this device any porcelain body or enamel can be properly baked without risk and its maximum strength remain secure, without having to watch the glare from the furnace, or to time it, or to use any of the exacting and uncertain methods now in practice.

PERICEMENTAL ABSCESS

BY D. D. SMITH, D. D. S., M. D., PHILADELPHIA, PA.

The affection here denominated pericemental abscess was first noticed by the author about 1890, and first described by him in a paper read at the Tri-union Meeting of the Virginia State, Maryland State and District of Columbia Dental Societies, held at Old Point Comfort, Va., May, 1897. Prior to this all abscesses associated with the teeth and alveolus were styled alveolar abscess; the only exception to this being the occasional use of the meaningless term "blind abscess."

It was not until quite a number of these peculiar tumoric growths found on the roots of teeth—especially between the roots of molars—had been observed and noted that their distinguishing characteristics were made a subject of special interrogation and study.

ATTENTION FIRST ARRESTED.

While treating the putrescent root-canals of a superior left bicuspid in the year 1890, two hitherto unobserved diagnostic conditions came prominently into notice. It was evident that the tooth was associated with an abscess, yet the most persistent efforts to relieve it by treatment through the root, were wholly without results; at the same time the previously cleansed and disinfected canals of the tooth remained entirely devoid of infection. Repeated dressings and medication during a period of three weeks failed to develop any odor or to make any impression whatever for the better. At the end of four weeks the tooth was extracted, when the cause of the trouble and the negative results in treatment, because apparent. Lodged in an irregular depression of the root, formed by a slight, sharp bend, about one-quarter of an inch from the apex, was a glandular, fibrous tumor of the size of an ordinary pea, covered with globules of pus. The base of this tumor, or abscess, was relatively large and strongly attached to the pericemental membrane. It was entirely independent of the pulp and canals, having no communication with them whatever, either at the basal attachment or at the apex. I remember well, that in reciting this feature of the case at the meeting referred to, several who took part in the discussion refused to believe that such conditions could exist.

THE DAWNING OF RECOGNITION.

In the dawning of my observation of these pathological conditions, the recognition of them was so confused and imperfect—for in the beginning only chronic cases were apprehended—that it required several years to differentiate them from the ordinary alveolar abscess.

THE REVELATIONS OF AN ACUTE CASE.

The observation and conduct of an *acute* case in the spring of 1895, developed the missing diagnostic links, opened the way

to a more perfect understanding of the etiology of the trouble, and suggested the nosology we have adopted.

This case is of peculiar interest, and is here cited in the hope that it may serve to fix the special pathognomonic features of the disorder. It was in connection with a second left upper molar, a tooth of typical formation, in the mouth of a young M. D.—a mouth marked, because of virulent infection on all surfaces of the teeth.

BEGINNING OF AN ACUTE CASE.

The patient presented rather hesitatingly, complaining of an uneasy sensation only, which he hardly classed as pain, but which he located without hesitation in the offending tooth. Examination disclosed no diagnostic symptoms except a very slight loosening of the tooth and a barely distinguishable response to tapping and pressure. There being no evidence of periosteal irritation, and the pulp being alive, I was disposed to regard the complaint as having origin more in the imagination than in a real pathological state. Following an application of tincture of iodine to the gum over the affected tooth, the case was dismissed with the suggestion that the pain was probably due to some unusual or misdirected pressure in biting.

APPREHENSION A DIAGNOSTIC SYMPTOM.

The next day the patient returned, with the local symptoms equally obscure; there was little evidence of inflammation, no swelling, no decided pain on pressure. The most prominent feature of the case at this stage was the feeling of apprehension, the decided conviction of the patient that there was something wrong with that particular tooth.

The case was a regular daily visitant for about eight days. During the first five days no strongly marked diagnostic features developed, but it excited interest, and not a little anxiety. The treatment consisted of external applications only, the quieting effect of which seemed to be most evanescent. Neither heat nor cold applied directly to the tooth and gums gave rise to any unusual sensations of pain or relief. There was no appreciable swelling, no marked periostitis or other evidence of the inflammation save the pain; this had become continuous, and was definitely located *in the tooth.*

On the fifth day a diagnosis of acute pericemental abscess was made. The tooth had become more loose and perhaps more painful; it responded more acutely to tapping and pressure, but the pulp was deemed to be alive. To assure myself that it was not implicated in the trouble, I decided upon devitalization.

(IN PARENTHESIS.)

And here parenthetically I desire to put on record a protest against much that has been written in disparagement of arsenic for the devitalization of pulps, and present the one proper method for using this valuable agent.

ARSENIC AS A DEVITALIZER.

Although wholly contrary to accepted teachings and practice, the *arsenical paste*—white arsenic, morphia acetas aa. creosote q. s.—should *never* be placed in contact with pulp tissue; this application should always be made to intervening vital dentin.

The cavity in the tooth in which the application is to be made should be so shaped and arranged that the arsenic shall be securely confined in contact with vital, sensitive dentin only. There should be no possibility of its escape to other mouth tissues, either through the confining filling or around the margins of the cavity. If the cavity of decay cannot be made to securely confine the arsenic—and very frequently it cannot—or if it desired to destroy the pulp in a sound tooth, a special cavity or large drill-pit should always be made *in another part* of the tooth, one in which the arsenic can be perfectly confined. The application may be made in a cavity remote from the pulp with perfect assurance, provided it is secured there in contact with sensitive dentin.

WHY PAIN AND SYSTEMIC SYMPTOMS RESULT FROM THE USE OF ARSENIC AS A DEVITALIZER.

It is placing the arsenic upon living pulp tissue that induces the pain, and it is the escaping of the arsenic from the cavity to the pericementum and gums, through or around the confining filling, (temporary gutta-percha stopping is the best confining medium) that has been, and is, the cause of all supervening troubles—gum inflammations, alveolar absorption and necrosis—which result from the use of this agent.

Manipulation in accordance with the method suggested will insure painless and perfect devitalization in any tooth in from twenty-four to seventy-two hours, and that with no possible systemic injury, neither inflammatory manifestations in any contiguous tissues.

THE NARRATIVE RESUMED.

Drilling through a small crown filling into the dentin, the tooth-bone was found in an exalted state of sensibility. Assured of my diagnosis, I determined, if possible, to reach the seat of the abscess and evacuate the pus in the hope of effecting a cure. An arsenical application was accordingly made to the dentin, which so perfectly destroyed the pulp that its removal was effected within thirty-six hours. This operation produced no disturbance, neither was there any incident following it. The removal of the pulp and dressing of the roots had no appreciable influence on the abscess symptoms; the soreness of the tooth, the continuous (not throbbing) pain, and the mental disturbance—a feeling of apprehension—continued unabated. I next drilled entirely through the crown, reaching the alveolus at the point which extends down between the roots. This operation was very disappointing in that it failed to evacuate any pus or to develop any odor. The third day after the opening was made upon the alveolus, there appeared unmistakable signs of infection in the left antrum. Unwilling to risk further treatment, the offending molar was extracted, when the cause of all this trouble became apparent. Just above the opening which had been made with the drill, and closely adherent to the inner side of the distal buccal root, was the peculiar but well-developed lobular sac of the abscess, with small globules of pus disseminated over its surface. The night following the removal of the tooth there was a copious discharge from the antrum through the left nostril. An opening was at once made through the alveolus into the antrum and treatment instituted through it. The antral cavity was syringed twice daily with phenol sodique, diluted about one-half with water, and at the end of two weeks the case was discharged entirely well.

WHY THIS CASE POSSESSES GENERAL INTEREST.

This acute case should possess general interest for the pro-

fession, not alone because it presents the distinguishing peculiarities and diagnostic symptoms of this affection, but more because it discloses the serious nature of the malady and points to some of its usual but unrecognized complications.

A COMMON AND SERIOUS MALADY.

It is manifest that the pathological condition we are discussing is not only far more common than has hitherto been suspected, but that the infection resulting from it is the occasion of mang grave systemic diseases as yet unsuspected. It is a condition which may be readily diagnosed when in a state of activity, but when chronic and apparently inert, it may be difficult of recognition. In the guise of innocent inactivity it gives rise to perpetual infection, and frequently arouses most serious systemic maladies, conditions far more to be dreaded than its most aggravated local expressions.

MANY CASES TREATED.

During the ten years which have followed the treatment of the case cited I have seen and treated a goodly number of these abscesses, both acute and chronic, but never with encouragement or pronounced success. One of the former occurred in my own mouth in connection with a maltreated, split molar, which eventuated in an obstinate double antral infection. Another—chronic—illustrated in this article No. 3, was the occasion of a grave head trouble—a burning pain under the scalp, attended with exhaustion and despondency. These conditions were immediately relieved through extracting the tooth. No. 4 was the cause of the development of a severe double antrum infection. No. 5 was the occasion of a marked condition of malaise, attended with mental depression and hallucinations. In the latter two cases, extraction of the offending teeth afforded immediate and pronounced relief; the antrum trouble progressed rapidly to complete cure, and the malaise and mental depression to complete systemic restoration.

In but two instances, where pericemental abscess has been surely diagnosed, has there been any prolonged effort to retain and preserve the tooth. In these cases—both teeth superior molars—the abscesses have extensive basal attachment, which supplants and occupies the territory on the inner surface of the

roots at their junction with the crown. These abscesses are quiescent, and have no perceptible pus discharge; while the teeth are somewhat loose, they are in use in mastication, and occasion no complaint. In both instances the teeth were experimentally retained: there is absolutely no hope of bettering their condition by treatment, either through surgical removal or lymphatic absorption.

THE ETIOLOGY AND NOSOLOGY OF PERICEMENTAL ABSCESS.

In view of what has already been stated, the etiology of this affection is apparent. The trouble is due to an irritant on the outer surface of the pericemental membrane, and primarily, any external tooth-infection, more especially stagnant matter adherent to the necks of teeth, may cause it.

CONFIRMATORY TESTIMONY FROM DOCTOR FORMAD.

The histological researches of the late Doctor Formad, of the Medical Department of the University of Pennsylvania, as revealed in a private letter under date January 20th, 1898, fully confirm the status ascribed this pathological condition as a new discovery; they also stamp its nosology as correct, and reveal why it may, and does, occur indiscriminately on teeth with and without vital pulps, and why it is wholly unaffected by any known method of treatment, either through the root, by surgical interference or by external applications.

DIAGNOSTIC SYMPTOMS.

The diagnostic symptoms of pericemental abscess are distinct and plain when once distinguished. In acute cases the first manifestation is pain; not severe, but continuous, and located by the patient in the offending tooth. Nervous apprehension on the part of the patient is, I believe, always incident to it. The trouble is liable to be confounded with periodontitis, but is readily distinguished from it. In acute pericemental abscess, there are no marked inflammatory symptoms in the alveolar and gum tissue; no swelling, no acute pain in response to tapping or pressure, no marked distinction between hot and cold applications, and no relief afforded by any local medication. The loosening of the tooth, slight in the beginning, becomes more and more marked as the

case progresses. It will thus be noted that while this affection has been, and is, liable to be confounded with periodontitis, all the diagnostic symptoms (except the pain and the response to pressure) in the former, are exactly the opposite to those in the latter.

Chronic pericemental abscess, is distinguished by absence of pain and all other active inflammatory symptoms. Occasionally, there is some hypertrophy of the gum tissue, but no marked swelling, neither soreness of the tooth on pressure. The tooth itself can generally be used in mastication without special discomfort. The escaping pus is discharged at the edge of the alveolus —between the alveolus and the gum. The point of egress may be distinguished by a peculiar lip, or mouth-like opening, marked by a circumscribed turgescent condition of the gum tissue; a condition wholly unlike the fistulous opening of an alveolar abscess.

TEETH SPECIALLY LIABLE TO PERICEMENTAL ABSCESS.

Any tooth having a pericemental membrane, and a conformation to accumulate infection, may be the subject of pericemental abscess. Molars with large, bell-shaped crowns and constricted necks, because of their shape and location in the mouth, are more especially liable to it.

WHAT IT RESULTS FROM.

The conditions preceding its development are neither systemic inclination through aberrant nutrition, nor a circulation floating a so-called gouty poison. It is not a result of infection from putrescent pulp tissue, nor from the prolific gaseous emanations resulting from nitrogenous decomposition within the tooth. Infection from such sources finds expression on the *inner* surface of the pericementum about the apical foramen, and eventuates in the ordinary alveolar abscess. The nucleus of this inflammation, and the resultant tumoric abscess, is in touch with some stagnant, septic irritant upon the tooth or teeth, the external surface of the pericemental membrane alone being involved.

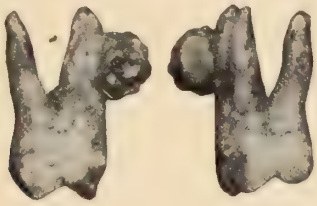
PUS DISCHARGE SMALL.

The amount of pus disengaged from these abscesses is relatively small. It is not confined within a sac or limiting

membrane, as is generally the case with an ordinary alveolar abscess, but it is sparingly distributed over the irregular surface and within the folds of the tumor-like body which forms the abscess.

HOW A PERICEMENTAL ABSCESS DISCHARGES.

The pus from a pericemental abscess never forces an outlet



No. 1 No. 2

Two views of original specimen forwarded to me in Autumn of 1897, by a practitioner in Connecticut; unable to recall his name. Histological report made by Doctor Robt. Formad, Med. Dept. U. Pa. See Kirk,—"Abscess upon Teeth with Living Pulps,"—*Cosmos*, August, 1898. Cuts made by *Cosmos* press, 1897. Used by Doctor Kirk only, to illustrate two papers: the first mentioned above; the second, "Pericemental Abscess," before N. Y. State Society, May, 1900. The latter paper ascribes the discovery to Doctor Darby, and the making of the photograph to Doctor Cryer: see *Cosmos*, Nov., 1900, page 1149.

No. 3
Right superior third molar; extracted July 4th, 1904. The occasion of serious head trouble.

No. 4
Left superior second molar; extracted July 21st, 1904. The occasion of serious double-antrum infection.

No. 5
Right superior third molar; extracted April 26th, 1904. The occasion of malaise and nervous depression.

through the alveolus and gums in the form of a fistulous opening, neither does it come into the pulp canals through the apical foramen. It escapes at the edge of the alveolus, at the free margins of the gums—commonly between root bifurcations—or it may be found oozing around one particular root of a molar; frequently it is the palatine root of a superior molar or the distal root of a lower molar. Turgidity of the gum tissue at the point of egress marks the exact location of the abscess. No pus whatever can be obtained from a pericemental abscess

in its earlier or acute stage. Even in chronic states the discharge is seldom profuse in connection with a single-rooted tooth. In a goodly number of cases where the abscess had assumed a hopelessly chronic form, I have found pus in large quantities and very offensive, in a few instances in connection with lower bicuspids, but more especially around lower molars. The incessant inflammatory action induced by this abscess not only increases its own substance, but it loosens the tooth, and through necrotic absorption forms, enlarges and deepens cavities and pits in the alveolus which become cesspools of pus prolific in infection.

The nerve centers, from my observation, are the special points attacked by the pyemic toxins from this abscess. Depression of spirits, loss of appetite, enfeebled digestion, malaise, headache, tonsular and pharyngeal inflammations, are the direct outcome. They also become the exciting cause of many far more serious troubles, both acute and chronic; among these we have found neurasthenic, gastric, gastro-intestinal, rheumatic and renal complications, including diabetis and albuminuria. From all these maladies we have not only afforded relief but effected cures by relieving septic mouth conditions, complicated with pericemental abscess.

POTENCY OF MOUTH CONDITIONS ORIGINATING SYSTEMIC INFECTION JUST IN THE DAWNING OF RECOGNITION, BY MEDICINE AND DENTISTRY.

Since the publication of the article on "Systemic Infection Due to Natural Teeth Conditions," in January, 1903, there have appeared two papers by medical men, of marked significance; one by Dr. Robert T. Morris, of New York City, entitled, "Infections of the Lymph-glands of the Mouth and Throat," and the other, "Buccal Antisepsis," by Dr. E. Dunogier, Bordeaux, France. The former makes this significant and commendable remark: "We are finding at my clinic very many more infections proceeding from the teeth than are found in some other clinics," and then goes on to say, "One class of infections, very dangerous ones, have been frequently overlooked by dentists: these are infections following the removal of abscessed teeth. Patients die and the cases are not reported; they come in to be treated for pneumonia. There are patients dying this minute in this city

from the result of having abscessed teeth extracted while in course of acute infection."

Doctor Dunogier speaks of "dangerous systemic results accompanying purulent conditions about the oral cavity," and recites the case of a "young man aged twenty-one, a sufferer from albuminuria for over six years," who was cured through what seems to me, very indifferent attention to the teeth and mouth conditions, which had previously been wholly neglected. To prove positively "whether the mouth-infection had been directly concerned in the causation of albuminuria, the patient was directed to abandon temporarily all dental care. This was followed five days afterward by the reappearance of the albumin, and thus the original diagnosis was definitely established." Another case of a diabetic, is noted by Doctor Dunogier with similar treatment and like favorable results.

When the glad day shall dawn when medicine and dentistry shall fully recognize this field of most prolific and dangerous infection—the human mouth—and truly differentiate its pathologic conditions, the prevention of disease, the relief of suffering and the lengthening of the average of human life, will be accelerated a hundred fold.

If it is true, as Doctor Morris says, that in dentistry and surgery "we find whatever we are looikng for," how important that we keep our eyes fixed on actual conditions. Actual conditions do not reveal that the extraction of a tooth with an ordinary alveolar abscess was ever the precursor of pneumonia. Pericemental abscess, with its pyogenic infection and enfeebling results, has undoubtedly been a predisposing factor in many cases of pneumonia. How important that medicine and dentistry distinguish between the two conditions!

Mouth conditions would appear very different to both professions if they could be viewed in the light in which they really exist. We do not need the hypothetical conditions of "thombi" and "embolic infection," said to be induced by equally hypothetical "crushing of cancellous bone structure in tooth extraction," for the induction of systemic infection. Infection is found as a natural exudate along the whole linear gum margin about the teeth; it is found upon the twenty to thirty square inches of tooth surface in every mouth, between and under the teeth, and in crypts and pockets about roots. It is found in nasal

passages, upon the tongue, on tonsils and pharynx. There is infection in the breath, in salivary and mucus sediment, in decaying food remains and in mouth debris of every kind. Add to these normal infectious states, the many serious pathological mouth conditions—delay in the teeth, putrescent pulp tissues, the retrograde metamorphosis of devitalized teeth, alveolar abscess, alveolar pyorrhea, and more than all the infection we are considering, pericemental abscess—and we have a combination of infection in the human mouth which should startle the community, and rouse to highest intensity the interest of medicine and dentistry alike.

The question may arise, is pericemental abscess a state of pyorrhea? My answer is emphatically in the negative. Pericemental abscess and alveolar pyorrhea are often associated in the same mouth, and they may have similar origin, but they are separate and distinct affections. I have never observed the two in connection with the same tooth. I believe the condition non-existent. Pericemental abscess developes from a point of irritation on the external surface of the pericementum, usually some inaccessible depresion in which the infection lodges and is confined. It is generally found between the roots of double or multi-rooted teeth, or it may be at the end of teeth having fused roots. Alveolar pyorrhea is more commonly found in connection with single-rooted teeth; when associated with molars, the infection is between, rarely, if ever, under them.

Pericemental abscess is a characteristic tumoric growth, generally between the roots of teeth; alveolar pyorrhea is an inflammation beginning in the pericementum at the free margin of the gums; in its progress it destroys cemental and alveolar tissue, uncovers portions of the roots of teeth, develops pus, and imparts a characteristic odor to the breath. This inflammation leaves in its train not degenerate, sero-fibrous growths, but broken-down tissue remains, calic sedimentary matter, and other debris which destroys permanently all vital relations between the uncovered portions of the affected roots and the alveolus.

Pericemental abscess, virulently infectious, is incurable, except through loss of the tooth.

Alveolar pyorrhea, often equally infectious, is wholly amenable to rational surgical treatment.

WHAT WILL WE DO WITH OUR NEURASTHENIC PATIENTS?*

BY C. C. MOTTINGER, D. D. S., AKRON, OHIO.

One of the great questions confronting the dental profession to-day as never before, when science on every hand is making such great progress, is how to make dental operations of all kinds entirely painless and yet whenever possible to have the patient absolutely conscious.

When Dr. Horace Wells, in 1844, discovered nitrous oxide gas and demonstrated its use in all minor surgical operations, he conferred upon the dental profession one of the most lasting blessings man could bestow upon future posterity.

The profession was at first slow to adopt this new anesthetic and make use of it in their daily practice, but after becoming better acquainted with its properties and effects they gradually introduced it in their operations, until to-day it is freely used in most dental offices.

Nitrous oxide, nitrous oxide and pure oxygen, ethel bromide, and some of the other newer anesthetics, such as narcotile and somnoform, have answered their purpose very satisfactorily and to-day the dentist can assure his patients that in nearly all minor surgical operations he is called upon to perform in the buccal cavity there will be absolutely no pain. With this positive assurance the twentieth century dentist finds little difficulty in inducing even his most nervous patients to have offending roots extracted, the antrum of Highmore opened into, the drill passed through the outer alveolar plate to open a stubborn blind abscess, or a semi-putrescent pulp removed. From their own experience, or the experience of their most intimate friends, they are convinced that there will be no pain.

To those patients of ours who do not want to be unconscious when a minor surgical operation is being performed upon them we then call to our aid cocain, nervanin, eucain, adrenalin and other drugs of that class and in most cases they prove to be very valuable allies.

So you see along the surgical line the dental profession has about accomplished the elimination of pain; that from which the

*Read before the Northern Ohio Dental Society, June, 1904.

healthy as well as the delicate, the strong and the robust as well as the most nervous, all shrink with dread.

But how about operative dentistry? To have the drill run into that sensitive cavity! Now we have the serious question that confronts the profession everywhere. Sarah Van Buskirk has written a parody upon the lines of Edgar Allen Poe, which describes the feelings of the patient as he faces that terrible moment.

Hear the buzzing of the drill,—
Rasping drill!
What a world of torture in my jaw it doth install!
In this molar void and aching,
Wretched havoc it is making.
I am gagged; I cannot speak,
I can only shriek, shriek, shriek,
In a clamorous appealing to the mercy of the dentist,
In a mad expostulation with the fierce, malicious dentist,
Digging harder, harder, harder,
With a savage fiendish ardor,
And a resolute endeavor,
Now to slay me, now or never,
Oh, the drill, drill, drill.
How it files and scrapes and grates!
How it grinds and triturates!
In the whirring and the burring
Does my anguish sink and swell,
In the crushing and the cutting of the drill,
Of the drill,
Of the drill, drill, drill, drill,
Drill, drill, drill—
In the punching and the crunching of the drill!

Hear the humming of the drill,
Wicked drill!
What a world of agony its clatterings foretell!
Through my blood a chill 'tis sending
With its sing-song never ending.
In the harness, bit and rubber,
I can only slobber, slobber.
And to make things more like Hades, through the window I can see
The devil on the court-house leering viciously at me.
While the drill is gritting, gritting,
And my frantic nerves are splitting,
My defenseless flesh is crawling
'Neath the friction hot and galling.

Oh, the drill, drill, drill;
How it scratches, pounds and thumps!
How it spins and bores and bumps!
Keeping time, time, time,
In a sort of Runic rhyme
To the rapping and the tapping of the drill,
Of the drill,
Of the drill, drill, drill, drill,
Drill, drill, drill,
To the ramming and the cramming of the drill!

The manner of handling nervous patients while in the chair will in most cases have a decided effect upon them. The operator, seeing that he has such a patient before him, should not become nervous or excited. The patient's attention should be diverted from the dread of the operation. This can sometimes be accomplished by engaging in pleasant conversation for a few minutes on some topic that will be of interest to the patient and by maintaining an easy and dignified self-possession. Most of the profession understand this method when operating upon a child but fail to apply equally strategic methods when dealing with an adult. With nervous patients the dread of the drill is often more wearing than the drill itself. The thought of undergoing an operation produces much the same psychic effect upon the mind of the adult as upon the mind of the child. For after all in the dental chair we are all children—some a little older grown.

In performing an operation, nothing but the sharpest instruments should be used, and the cavity should be kept perfectly dry whenever it is possible to do so. Various medicaments may be applied in the cavity to relieve sensitiveness. Among these may be mentioned a solution of menthol, cocain and carbolic acid, zinc chloride in an alcohol and chloroform solution, vapocain, hemicranin and many others.

Many times the doctor is confronted by patients who say to him that they are extremely nervous and their teeth exceedingly sensitive, but upon examination it is found to be untrue. Such patients may be said to be suffering from a mental pain or a fear in the pain-center of the brain. As a general rule the application of medicaments of some kind above referred to is effective with this class of nervous patients.

There remains another class of nervous patients that are not

so easily treated. These patients in addition to suffering great mental pain and nervous excitement undergo extreme physical pain. In such cases the nerve fibrils in the dentine are very sensitive and are easily irritated by the action of the drill. The rest of the nervous system out of sympathy responds to the action of these minute fibrils and the patient is thrown into a state of uncontrollable nervous excitement. Cataphoresis is especially applicable in the treatment of such patients. By this form of treatment certain fluids, together with the substances they hold in solution, can be conveyed from the positive pole into the nerve fibrils and tissues of the pulp of the tooth toward the negative pole. Cocain seems to be the best anesthetic thus far discovered that will break up into proper soluble form to be carried into the tissues of a tooth by means of a continuous current.

One of the strongest arguments, possibly, for this method of treatment is that the anesthetic can, by the proper application of the current, be carried into the tissues of the tooth to the desired parts without any previous excavations. Great care should, however, be exercised in the use of electricity. The immediate application of too strong a current will produce pain. On the other hand if the current be allowed to run into the cavity for too long a period of time or at too high a voltage, the life of the pulp of the tooth will be endangered. These dangers can all be avoided by the use of only the most accurately constructed instruments and a careful handling of the same.

Much more might be said in a paper of this character concerning the treatment of the neurasthenic patient, but in conclusion let conservatism in the use of any new or untried drug or treatment, whereby permanent injury might result, be the watchword.

DISCUSSION.

Dr. W. H. Whitslar, Cleveland.—I want to pay a compliment to the essayist this evening, through this paper. He has made an effort for the dental society, we believe, and we feel like complimenting him. I find enough in the paper that I could discuss with him. Three years ago I read a paper on "Neurasthenia" and I would simply like to read what I stated at that meeting in regard to neurasthenia. A succinct definition is given by Prof. F. X. Dercum, who says, "Neurasthenia is a persistent diminuation of

nervous energy, together with an increased reaction, mental and physical, to external impressions." Dana, an eminent authority, says, "Neurasthenia is a chronic functional nervous disorder which is characterized by an excessive nervous weakness and irritability, so that the patient is exhausted by slight causes and reacts morbidly to slight irritations." In Ranney's "Lectures on Nervous Diseases" we find, "Neurasthenia is said to include all manifestations of the condition known as nervous exhaustion."

I therefore assume that it is not exactly a disease in itself, but an inco-ordinate action of neurility, whereby it may be made the basis of many functional diseases. These definitions also indicate that two forces are concerned in neurasthenia—namely, neurism and psychism. As the mental processes are highly predominant in the affection, we are reminded of the remarks of Huxley, who said, "In all intellectual operations we have to distinguish two sets of successive changes—one in the physical basis of consciousness and the other in consciousness itself; one set which may, and doubtless will, in course of time be followed through all its complexities by the anatomist and physicist, and one of which only man can have immediate knowledge. As it is very necessary to keep up a clear distinction between these two processes, let the one be called neurosis and the other psychosis."

Neurasthenia affects the whole system. Evidences of a neuropathic constitution lead one to suspect nervous stigmata, and irregularities of mind and muscle become apparent. To be specific, two principal symptoms of neurasthenia are nerve weakness and nerve irritability. Clinically, there are two types of affections—namely, the cerebral and spinal stigmata. A further analysis of neurasthenia pronounces it both as simple and that which is associated with other diseases. Disassociation of these forms is difficult, for often diseases of the liver, stomach, uterus, etc., are really dependent upon a morbid weakness of the nerves. In the simple forms of neurasthenia the symptoms are not perceptible, but are subjective. In combination with hysteria, epilepsy, etc., the objective signs are recognized. In neurasthenia the special senses are not always affected, but may become exciting causes of the disorder. For instance, we perceive congenital defects of vision which later cause change of habits and of the work of children. Neurasthenia in children is often ascribed to "overwork" when it finds its etiology in astigmatism, muscular insufficiency, myopia, or hypermetropia. The far-sighted (hypermetropic) child neglects books and cares for out-of-doors sport; the near-sighted (myopic) child does not care to play out-of-doors, and reads more than is usual or best for him, hence we notice children of the latter class acquiring sedentary habits and becoming nervous and irritable. They lose their power of co-ordination, and neurasthenia is produced long before the cause is recognized. In this class of dental patients we find aggravated conditions which interfere with the proper care of the teeth. The same results may be said of those affected with muscular insufficiency and hypermetropia. An eminent oculist informed me that he observed more affected with neurasthenia of the above classes than those afflicted with myopia, because the latter class give up to their conditions more readily.

A large proportion of people use their brains in the struggle for existence. It is remarkable to what extent brain matter may be used before the cells composing it are exhausted; they do become exhausted, however, from overaction. Brain cells are much like muscle—if overworked, exhaustion is produced. "Musso, on observing that soldiers presented in the evening, after a day's march, fatigue in the arm and leg muscles, conceived the idea that fatigue altered the composition of the blood, and he afterward discovered that the blood of the fatigued animal when injected into an animal at rest produced in the latter the characteristic symptoms of fatigue." It should be remarked here that neurasthenia does not stand in relation to the blood as does anemia, chlorisis, etc. It affects the nervous system directly.

C. F. Hodge, in the *Journal of Morphology*, 1892, gives some remarkable experiments which were made upon animals before and after fatigue. As an illustration, the nerve cells of bees that had worked all day were compared with those of the same hive that had been resting during the same period. In all instances, and in other animals upon which the same experiments were performed, changes were discovered in the nerve cells, and the changes were always the same. It was found that the nucleus of the cell decreases in size and becomes irregular in outline. The protoplasm of the cell shrinks and spinal ganglia are vacuolated. The cell-capsule, when present, has a decrease in the size of its nuclei. Lastly, nerve cells recover if allowed to rest for a sufficient time, the recovery being slow.

From these conclusions we infer that from the loss of cell substance there must be much waste product circulating in the blood, and, as related in the experiments of Musso above quoted, the excessive material has a toxic action, and thus paralyzes the system. In other words, there is an auto-intoxication of the tissues from simple fatigue. There is in this a suggestion of the similarity to auto-intoxication due to indigestion, as related by Dr. Eugene Talbot, of Chicago, who states that auto-intoxication from indigestion involves the whole mucous membrane of the alimentary canal and especially the mouth, in which there is a change of the secretions and thickening of the mucous membrane. It is stated by Professor Dercum that there is a relation between gout and neurasthenia, with the fact that "neurasthenia very often contain uric acid in great excess. Uric acid is not, as has long been taught, a substance standing in complementary relation to urea. We have reason to believe from the researches of Horbaczewsky that it represents the chemical disintegration of the nuclein constituent of cells, and if this be true its presence in excess in neurasthenia and the relation of gout to neurasthenia acquires a new significance."

It is often reasonable to claim that the much-discussed disease familiarly known as pyorrhea alveolaris is without question an example of an over-worked, exhausted, peridental membrane whose tissues are intoxicated with the excessive material in the blood currents and intercellular tissue. It is a neuratrophia or impairment of the nutrition of the nerves. Exhaustion of the peridental membrane when it occurs is often

confined to one or more teeth, and is the result, first, of some irritation, and, secondly, an attempt to relieve the uneasiness produced by the irritation with the pressure against the occluding teeth. With pressure comes exhaustion, "neurasthenia localis," which eventually terminates in the graver tissue destruction. From the presence in the blood of toxic substances as an outcome of profound neurasthenia, from whatever cause primarily, it is just to argue that all tissues of the mouth which are subject to blood currents may suffer from toxic condition. The cacochymic state undoubtedly produces neurasthenic conditions surrounding the teeth, as well as of the recrementitious fluids of the mouth. Further, it is my thought that stigmatism of the enamel, as shown by the so-called atrophied spots and pits, are the relics of trophoneurosis—an impairment of nutrition which may be due to exhaustion. This condition is mainly found in third molars. In the treatment of neurasthenia there are two elements to consider—the patient and the dentist himself. In both we sometimes find the same conditions; that is, worry, fear, exhaustion from temperature, deficient respiration and psychic disturbances. The dentist is exhausted by continued physical labor and anxiety for the care of those whose nervous systems are exalted and intractable to common measures. He is compelled to reduce psychic disturbances by putting himself *en rapport* with the patient. This signifies a depletion of his own neurodynamia or nervous force. The first principle of this treatment is to secure passivity of the patient. Rest is the *sine qua non* treatment for neurasthenia. Upon this fact Dr. Weir Mitchell based his famous treatment of neurasthenia, known as the "rest cure." In the performance of dental operations there is no opportunity to follow in detail the rest cure for lack of time. We produce, first, as above stated, passivity; then comes faith. With a basis of passive or restful thoughts and the concurrence of faith or confidence in the dentist, he (the dentist) now is able to suggest orally, or through the subjective mind, his control of the sensation of the body. This proposition is based upon the hypothesis that man has two minds; that is, one the objective mind and the other the subjective mind; and also upon a subsidiary proposition which relates to the subject of psycho-therapeutics—namely, "the subjective mind has absolute control of the functions, conditions, and sensations of the body." It is believed that the above propositions are the fundamental elements of the whole domain of psychiotherapeutics. Where is there a dentist who has not felt the need of this power and who does not indeed use it, unconsciously or otherwise?

When neurasthenia is recognized in a patient who applies for services, prudential measures for the care of the teeth are necessary. If there is any condition that requires care, it is at this period, for many cases of neurasthenia drag out for years, and the patient eventually dies of some intercurrent disease. As shock if often one of the causes of this disorder, all subsequent operations are under restraint, and should be in many cases only temporizing. It is advisable to prepare the patient for the operation by suggesting a period of rest previous to the visit, a good night's rest; or the use of medicaments, as a sedative or stimulant, as the case requires, is frequently desirable. Strychnia, potassium bromid, antipyrin, morphin

(used rarely), are some of the most reliable remedies. Hot water as a drink before and after operations is one of the most valuable remedies, and its value may be enhanced by the use of some of the milk foods of which we have familiar knowledge. Good food is at all times essential to the well-being of any individual, and it has double value in neurasthenia. Good sleep, good food, are health-restorers.

In local neurasthenia of parts of the body, for such may occur, we believe the conditions of the part suggest the treatment.

It must be remembered that there are different phases of neurasthenia and a specific treatment is not known.

Now in regard to the production of passivity, I remember at a meeting years ago, when we met that great man, now dead, Doctor Baldwin, how he said he got right at the heart of the patient the moment he came into the room. The paternal feeling he exhibited to that patient did draw to him the faith they could have in him, not only by words, but by contact. The warm nature has a great influence upon the mind of the patient in the mere contact. You go to the patient with your hands cold and there is a repelling feeling exhibited at once. Therefore wash your hands in hot water rather than cold water before going to a patient. Have the blood in your hands, not in your feet. There is a reason for that, and Mr. Hudson draws this conclusion. When we place our hands together we place the terminal ends of the nerves together; the nerves are the elements which convey the impulses to the brain. Therefore, in the contact between the patient and the dentist there is the possibility, and yes, the liability that we can convey to the mind of the patient, the subjective thought that we are trying to impress upon the patient that it will not hurt. So that we suggest to the patient, the possibility that he may be at ease, and it is received and therefore puts the patient into the condition of relaxness. There are a good many things I would like to say along this line, but we might multiply words and not say any more.

Doctor Pettibone.—Along this line I notice you recognize the bromides and strychnine. I have seen other things used that I know give more benefit. In this way you get a complete relaxation for some time, which will produce a paralysis without losing the power of their muscles. Some object to them for fear they will become habitual. I would like to have the profession try it. It came to me from a man who had done a great deal of experimenting along this line, sometimes he found cases so thorough as to put them in complete relaxation.

Doctor Junkerman, Cincinnati.—The question of psychic phenomina is interesting to me. I hoped Doctor Whitslar would go deeper into the subject than he did. I think that dentists should learn as much as possible about it. Speaking of dividing the mind into two features, the objective and the subjective, let us call it conscious and subconscious which refers to the same division. There are good reasons why the mind should be thus divided. The conscious mind is supposed to have its lodgement in the cerebrum of the brain, the subconscious in the cerebella. Impressions have been issued in the upper part of the head, and while the person is

still unconscious, he is able to move the muscles of the body and again they have been issued from the base of the brain and while the person remained conscious, was paralyzed. Now, then, from a medical standpoint. A physician gives his bread-pill when he has nothing else except his patient's confidence, and the patient gets relief because of the faith he has that the physician can cure him, and it has the desired effect, because the conscious mind is acting through the subconscious and the subconscious controls the functions of the body. If you will keep this in mind you will see how it can do an immense amount of good. The physician tells you you must think you are going to get better. That is three-fourths the fight. The conscious mind begins by doing a certain thing and the subconscious takes it up. The subconscious acts automatically, and the conscious controls the body through the subconscious mind. Now we form a habit. Habit is simply a thing repeated and becomes a part of our nature, hence the subjective mind has been acted upon so often that it will go that way even when we want to go the other way and we have a hard fight in order to stop. So you see how we can act upon our patients in this way, suggesting to the subconscious mind by the objective mind. We thus assist nature to bring about restoration. It is worth thinking about.

THE COMMERCIAL ASPECT OF DENTISTRY.*

BY M. M. HAAS, D. D. S., EVANSVILLE, IND.

Is it not odd that the subject of definite dental fees has been a neglected one in our gathering here these many years?

And yet what is more important to our material welfare than the subject of proper fees? For isn't a compound fracture of one's finances a fit subject to dwell and then operate upon? I think so.

Here to-day are men from every part of the State, every variety of dental species, the esthetic, the commercial and every intermediate type. Men who are here for various reasons, for sanity is not a matter of geography—by no means.

They are here to get a whiff of candor, a bracing breeze of face to face intimacy, for nothing will cause a man to forsake the crysallis state of ill-feeling to one's competitor than a good heart to liver talk, else they would stay home and read their magazines and be content.

The ethical, the professional and the artistic sides of us are

*Read before the Indiana State Dental Society, 1904.

naturally predominant, and well it is so, yet if you will pardon me I am going to present to you this subject—not only as a vital one—but one eminently pertinent.

In the outset, most of us will agree that between the extremes of our calling, *i. e.*, where some of the favored are enabled to select their clientele, who do not question prices, who charge well, live well, but don't die well, we have the other extreme who eke out an existence somewhere, somehow. Between these are to be found the mass of the profession—the medium-price men who regulate their prices by each other, for everything is relative except love and war.

These men whose education, ability and general environment differ but little, naturally feel that the same immutable laws govern each, and the struggle begins to see who can acquire the larger practice in that community by the various means of advertising, good work, prices, etc.

Did you ever seriously consider just why you charge such and such a price for specified routine work? No? Well, it's a long story and goes something like this:

You feel you are not getting quite your share of practice, first, among your friends, then generally in that locality. You, perhaps, identify yourself with various public affairs and yet all is not as you would have it. You do your best work and still mishaps galore happen and your practice is limited, for to err is human. You get a few new families, of course, each month, who have left their dentist for the thousand and one reasons why patients leave—and more often it is on account of disputed bills and apparent overcharges than anything else—and you naturally wonder if the other fellow has the same trouble.

Of course he does. The same competitor you no doubt called a lobster—for we are prone to underrate our brother dentists—may be one in a sense, but most of these self-same lobstes I fancy could better be called an oyster, for they soon learn to selfheal the wound and to convert the stone-bruise into a pearl of experience, priceless in its invaluable lesson.

Trouble is incident to the imperfections of mankind and the case of mental jaundice accredited to your competitor may be simply a yellow streak we all have in us, and after all, our yellow streak may easily be caused from the reflection of our gold fillings. Nothing worse.

What you want to do is to fraternize more. Get it out of your system. But to return. Candidly, when you go into another city and hobnob with your brother dentist, go through the reception room and out into the laboratory where the air and surroundings are delightfully informal and conducive to familiarity; or you perchance know him well enough to adjourn to a friendly cafe, sit around the table where spirits dispel cares, where your champagne feeling is in keeping with your beer ability, and profanity is the safety-valve that regulates the high pressure of us human vulcanizers, what happens? I'll tell you. You soon talk shop and eventually prices. You are just itching to know what the man charges for a Logan crown, or a gold crown, how much for plates, for regulating, etc., etc., and why not?

It is astonishing how we fellows try to deceive ourselves anyway. The fact is we are apt to try to be so profound, so chesty, so very, very important at these meetings that it often is highly amusing. It somehow reminds one of the story they tell about Mr. Dubois. It seems that after a tremendous struggle in which he was barely elected, flushed with victory, he returned home. After swinging off the train, he was delighted, indeed touched to the point of tears, to find every male inhabitant, not to mention a brass band, waiting at the station.

Springing upon the baggage-truck, he began: "Fellow citizens, I thank you," and got that far when upon a man pulling him down he asked what was the matter and was told that "This blowout ain't for you, it's for Jim Barton who is going to open up a new saloon."

Most of us are better imitators than investigators, and I say that with the best of intentions, for it is no disgrace not to be a genius. We are here for mutual improvement from every standpoint including the pecuniary.

It has been my pleasure to be associated with a number of Indianapolis dentists for many years, in fact I count them among my best friends and the same spirit pervades the atmosphere here as it does in the other communities, and the open secret is "compensation for work."

I have listened innumerable times to the charges and counter-charges of many of them as to the undercutting of standard fees until I feel like saying, "Get together boys and have an un-

derstanding." We had that same trouble at home, and haven't eliminated it entirely.

Thinking it over later, I wondered if an open discussion here would not be better, and so here is your chance, for a little relaxation among us may not be amiss once in a while.

Is there any valid reason why some standard recognized fee for routine work should not be considered by us? Understand me, "the ordinary in and out, everyday work," which requires a *reasonable* amount of skill only, "that the dental parlors, the new men, do as well as we do," the kind the courts recognize when we are sued.

This for our own benefit and also for the number of young men who have absolutely no idea as to what is customary and right to charge their patients.

If each young dentist goes out with a view of getting new patients with the bait of "low fees," the logical result is the drifting to dental-parlor prices, mannerisms and methods, or at the least a demoralized community.

This association is made up of men who, I venture to say, work for approximately the same figure. We are a small part of the aggregate number of dentists throughout the State who will not come and meet with us. So if this nucleus would establish a basis for such work as falls to our daily lot, the benefit as a "guide" would be worth considering.

"Yes, each case varies," I hear you say. To be sure; then charge accordingly, but don't we have hundreds of cases in our routine office work that are similar, painfully so?

The migration of patients, from one city to the other, soon convinces that patient that a certain fee is legitimate for a given operation when they go to another dentist to have work done, and if the eternal, grasping dentist, "who won't let the patient get away from him if price is the object," would keep a stiff upper lip and charge his proper fee it would be better for him and all the rest of us.

Deeming the foregoing remarks apropos, I would suggest that a committee, to start with, be appointed by the chair to formulate a price list of a given number of operations, as a test of this plan that all may be guided by it and to see how satisfactory it is otherwise.

In this connection, all the latitude possible should be al-

lowed those cases involving complicated conditions and the unforseen difficulties we constantly meet with, these at the present could well be omitted.

Such fees endorsed by this association would be of untold benefit to the honest practitioner; to the recent graduate; and to the public, as the questions of overcharge are reduced to the minimum and proper compensation is questioned the less. The charity cases will not be considered in this connection.

Is this reducing our profession to a trade basis? Not at all. Proper fees is so germane to our welfare, that in this world of unpaid bills, dodging collectors and even actual want—for dentists as a rule are never well off and always want something—that I wonder we allow ourselves to shirk this all too important feature of our practice.

Glory in the abstract is certainly right and proper; in the concrete the more so.

Individually we are isolated, each hewing his own timber; united I feel we can accomplish vastly more in this undertaking if adhered to—which is of course with ourselves.

Nearly every man, figuratively speaking, represents the atom of the State that coalesces in this well-chosen capital and ought to feel his responsibility, and likened to the rough diamond may need only the thorough grinding with the carborundum stones of experience to make of him a more valuable diamond, as each facet covering some depth of character would truly reveal the deeply-hidden lights of trials undergone in the grind and dust of every-day contact and friction, only to reflect the highly-polished service, after the ordeal.

With apologies to you for this digression from the scientific, I thank you.

DISCUSSION.

Dr. G. E. Hunt.—The paper was a very excellent one, but it seems to me the question of fees is one that cannot come properly before a State association for several reasons. In the first place, the only thing you could do is to state the minimum fee, but the minimum fee in Indianapolis ought to be a great deal higher than the minimum fee in some other cities of the State, and probably would be. That is one reason for its being difficult to make up a stated fee; besides the chief objection I would have to it is that

the State Dental Association is not the place to consider a fee bill. We have local societies all over the State and there are some societies even in cities, and this is the place where the fee bill should come up and be arranged for. If you do not have a local society in your town, you ought to get busy and organize one. There was one organized in Wabash a few weeks ago and there is a flourishing society in Ft. Wayne and has been for many years. It seems to me that the State Dental Association ought to be a body of men that consider matters of a higher degree of scientific work than the matter of a fee bill. I think we are more interested in the science and art of dentistry, or should be, as a body that represents the entire dental body of Indiana, than to consider fee bills, even if this were practical, and I don't think it is practical. As I said before, I think the only place for this to come up is in the local society, for it is practical there and it is not practical in the State body. Of course I think the matter should be given attention, and is being given attention, but it is in the local societies and not in the State associations.

SOME THOUGHTS ON HOW TO BETTER SERVE OUR PATIENTS.*

BY J. S. VAN METER, D. D. S., GALION, O.

It is not my purpose to introduce any new procedure in the practice of dentistry or to give instructions how to lessen the pain incident to the average dental operation.

There are those on the program who are better qualified to explain the different ways to eliminate pain, and clinicians who will illustrate in our clinics how to apply the various agents to your satisfaction.

The fact that I want to emphasize is, "Do we make use of the agents at our hands in our practice? Do we handle our patients in such a manner as to gain their confidence?"

Now, of course, this does not apply to you. Of course, you use the different agents to prevent pain, but some one is not, or else I have not been correctly informed.

I lately heard the name "agony shop" applied to a dental office. That was a new name to me although I had heard a dental office described by other adjectives equally as descriptive.

That person certainly had at some time an unpleasant experience in some dental office.

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*Read before the Northern Ohio Dental Society, 1904.

We may not all have the latest apparatus, but that is no reason why we should use a dull excavator or a dull chisel.

What torments a patient more than a dull engine bur, and what will give more satisfaction to the operator than a sharp bur and at the same time relieve the patient?

We can adjust the rubber dam without torturing the patient. A saturated solution of cocain will relieve that trouble and with the use of the napkin it is not necessary for the solution to spread to other parts of the mouth.

There are many other little details to which the dentist very likely does not give much thought, but to the patient it is a trial.

I know of no better short post-graduate course for a dentist than to spend an hour or two in the hands of a brother dentist. And I am very sure that his next patient will be treated with the greatest consideration; and whatever pain-saving appliances he has, will be used, and that very carefully. Why, he will think seriously of buying a cataphoric outfit, and stock his armamentarium with all of the pain annihilating drugs he ever heard of.

We have the children's teeth to care for; their troubles must be relieved also and their first visit to a dental office has very much to do with fixing habits in the future care of the teeth. I never deceive a child. I never tell them that I will not hurt them, but always have them understand what I am going to do next.

We all have our loyal patients who have great confidence in our ability to relieve them of their dental troubles, and if we succeed in serving them satisfactorily, they will send some of their friends to us. Then will come our opportunity to prove what we have been recommended to be. Then will be proven whether we are equal to the inheritance. Possibly the patient has been in the hands of a skillful dentist. The patient will soon know the difference, but if we prove ourselves as recommended, then we are capable of treating the mouth and associated parts.

Those of us who practice in the country are entitled to every consideration, for we have a mixed class of people as patients, and at the same time all must be treated equally.

We cannot, as a rule, practice some special line of work, but must be ready for any and all kinds of dental operations that come along. Our ingenuity is certainly taxed some times; the proper materials may not be at hand. Our supply houses have, as a rule, a most excellent mail-order service, and the proper materials

can be delivered in our offices inside of twenty-four hours. Or, if the case be urgent, can step to the telephone and the materials needed may be at hand by the next mail.

Our supply houses send their representatives to us with a most complete stock of dental supplies, and I always receive these gentlemen courteously, for I always receive some benefit from their visit. They are men who are well posted in all branches of the profession. They are authorities on the different dental instruments; are also posted on the manipulation of the different materials used for treating and filling teeth. They know what is being done by the profession all over the country. They meet the brightest and most progressive men in the practice of dentistry. Again I want to repeat, I always receive some benefit from a visit of one of these men. I usually appropriate some idea that I can use in my practice and to the good of my patients.

The treatment of people who may come to your office for other purposes than for professional service, is important. They may come to see you again when in need of dental service. There are so many little things that help to build up or to tear down our reputation which we must not ignore.

We know how to be modern, yet we may not have all of these modern appliances and must be content to add to our outfit gradually, for we are generally in the business to stay. No reputation or business is built up in a day. But we can be on the lookout for the little things, adding to our outfit those pain-saving and labor-saving devices as their usefulness and necessity are proven; carefully conducting our business, doing our best, no matter how trifling the operation, we will see our business grow.

We generally meet our patients under unfavorable conditions; they present themselves under depressing influences caused by physical suffering, or a dread of dental operations. When we have an appointment with one of those extremely nervous people, we should make an effort to meet them in a pleasant state of mind. A persistent presentation of cheerfulness on the operator's part will drive out the depression of the patient. See that the body is in a relaxed position; avoid tension. I always insist that high collars and neckbands be removed. The high collars and neck-bands worn by some people certainly have no place in a dental chair, when the operation is likely to be very lengthy.

This is an age of progress. The attainments in dentistry are

no exception. The progress of the last decade is marvelous. The standard of our colleges is being gradually raised, and the men being graduated to-day are well qualified to treat the teeth and associated parts.

Those early promoters of dentistry labored faithfully during the formative years of dentistry, and as a reward of their patience and labor, came within a very short time, the rubber dam, the dental engine, the cements, the mallet and cohesive gold.

The members of the profession to-day find themselves confronted with just such problems as the early promoters of dentistry had to meet; taking up the different filling materials, preparing them in different ways so that they can be adapted to almost every condition found; improving the different instruments and adapting them to the conditions found in our modern life, these improvements being made by progressive men who are always ready to serve their patients better.

In the early days of dentistry, the saving of teeth was the only consideration; no effort seemed to be made to make the patient very comfortable or to relieve the pain attending the average dental operation. There is no excuse for overlooking this important matter in this progressive age, having at our hands, the results of years of study, and the use of appliances whose usefulness has been proven.

DISCUSSION.

Doctor Dunn.—The demand of this paper is such that we make our patients comfortable and very comfortable only when we use pain-preventing methods. Painless dentistry is what the patients are demanding. I have in mind a man who is holding out the painless inducement to his people and I would say that I would rather go to him and have my work done over two or three times than suffer what is usually inflicted by us.

I believe in using whatever seems to place our patients in the most comfortable position and not contribute to their discomfort in any manner needlessly. During long operations the patient becomes very tired and often they can be relieved of that tired feeling by the use of an extra cushion or two put in the tired spot, and they will thank you for it. See that they have a comfortable chair, and that the position of the chair or head-rest is changed once in a while. It can be done without interfering with your operation and the patient will appreciate it. In extreme cold weather we have our steam-heated offices. The patient often comes in

with cold feet. I find a great advantage in having a soapstone under the radiator, and by placing that on the foot-rest, they are ready for operation at once with perfect comfort. If you place yourself in the dental chair once in a while it certainly will bring you to your senses and the next patient will get the advantage of your experience. I recall an instance when I was having an operation, the dentist caused more pain on my head than at the seat of the operation. There are the long nails gouging into the gum, etc.; there are many of these things that are useless and come from heartlessness. In setting a crown, if a man has that crown as he should, so that it is a perfect-fitting band, the placing of that crown in the proper position and pressing out the cement under the gum next to the peridental membrane will cause a great pain that is perfectly heartless. A small hole in the top of the crown, which can afterwards be filled, will avoid that discomfort. Now, encroaching upon the ground of the paper last discussed, is the statement that all these things, the comfort of the patient, the best serving of the patient, should be reciprocal and that patients after being properly handled should reciprocate in every way and it is not a kindness to them to do them good service and at the same time not get your proper return, not only the amount of fee that you see fit to ask for, but anything, as far as that is concerned. Some patients fail to respond in any manner. It is a little foreign to the matter, but I wish to bring it in because it has been of benefit to me and others who have used it. In the matter of collections it is no kindness to any creditor to not have him return just compensation; it is an unkindness to have him live and go to another dentist simply because he owes you. I believe in collecting, or at least having an understanding with him. On a small piece of glass in the window, I paint with aluminum paint:

"Please read. If you cannot pay for your work when done, say so before beginning, and unless arrangements are made for paying, cash will be expected."

This works like a charm, to have an understanding before the work is commenced. This paper is broad in its comprehension and takes in the methods of work as well as the demands of the patients. I saw a while ago a statement with regard to gold fillings. Some one asked, "Why do our gold fillings fail?" Some man answered that very perfectly, and to the point, "Small pieces of gold, large pieces of golden rule."

Doctor Clossen.—I think right along here in this line comes a thought whereby we can better serve our patients by giving care to the children's teeth and also in giving a general anesthetic in extraction of those first molars instead of torturing the patient.

The dentist is placed probably in a little different light than the ordinary surgeon. The surgeon usually has his patient anesthetized and he can operate as long as he pleases. The dentist does not have the patient in this condition, yet you may have many surgeons who vie with each other in making their operations as perfect as possible. No doubt many of you recognize that with two operations one hurts and the other may not. I think the one word that expresses the question here better than any-

thing else, is probably the word "skill," and we will find that in dentistry particularly it is required very much. The point we have been studying upon suggests that we should perform our operations more rapidly. Keeping a patient in the chair for three hours for a gold filling, when the operation may be performed in a half hour, is not adopting painless methods. You know I am a crank on rapid operations. This principle of rapid operation occurred to me and forced me into the admission of the skill with this soft foil. As to the gentleman who spoke before me, about small chunks of gold and large chunks of golden rule, I would say, "large chunks of gold and with that large chunks of golden rule, also." That is a method that should be accepted by more operators and if these operators would perfect themselves and make themselves skillful in the use and get whatever material they use of the best quality, they would find their operations would be very much less painful and the results very much better. Now, if the surgeon makes himself very skillful, you will notice that he always prides himself on the length of time it takes him to perform the operation and you will always find that he is working toward that end, finding that the patient is less exhausted by quick work. It has occurred to me many times where operations have been performed and hours taken when entirely unnecessary. You know what that means; you know what that does to exhaust the vitality of the patient as well as the operator. Therefore, I think that this kind of skill is the main thing in painless dentistry, and we should all study this point of perfection in the operations we perform. I do not believe it is necessary to stick needles into people for the purpose of producing anesthesia. If we perform our operations more quickly we would not be in need so often of anesthetic operations.

Doctor ——— There are many things we might consider, and one I wish to speak of; that is the matter of systemitizing everything we do. First, we may use with advantage systems that classify our instruments, our belongings, that they should be so placed that we can put our hand upon them in an instant. There is much time lost and the patient becomes tired.

Doctor Jackman.—There is one thing I want to emphasize in that paper and that is the essayist spoke about everybody being able to have sharp excavators, sharp tools. I want to impress upon the young men who are here, if it is necessary for you to go with one suit of clothes a year instead of two or three, do that and get an abundance of implements for your office; if you are the right kind of a young man you will come out all right. Get a good, first-class practice. If the patient finds there is everything up-to-date and first-class, he forms his own opinion, and you will soon have patronage enough that you can pay for these things. A man used to say that he never required more than twenty minutes for a filling requiring perhaps a book of gold. At the mid-winter conference at California he put in two large fillings and it required for me, from his description, three and one-half hours. He did it in twenty minutes. I became discouraged. I read that thing in the morning, the operation oc-

curred in the evening, and I thought I was serving time. I shut up my office, came to Cleveland, consulted Doctor Butler and one or two others and mentioned that case and they said, "Go home, and continue as you have, if you are going to live in that town right along." I have been continuing, to my sorrow, as far as the financial side of the thing is concerned. I am one of those fellows who has got poverty in the dental profession. A few months later, our friend, who spoke on limit of time in difficult operations, said that if our patients knew how little good we were doing them by our gold operations they would not spare the time or the nervous strain incident to putting them in. That was the birth of the new era. He said fill everything with gutta-percha from the east to the west. I would like to know how to make an operation in a short time and yet have it well done?

Doctor Junkerman.—I did not get the drift of Doctor Dunn's statement. I did not understand what became of the fillings he put in. Were they all right? I have seen these sudden operations performed and we failed to find them at the end of the year. The gentleman's statement afterward that "if our patients knew how little good we did them with the gold fillings," etc., led me to my conclusion. I have put in a book of gold in thirty minutes many a time and am willing to do it again before any committee or congregation. I made that challenge before the Kentucky State Convention and was challenged and the records show that I accomplished what I challenged. I have no special skill; have the knowledge that I have done it and you can do it also. As I say, I am on record as having done it in contour work. A gentleman who had been in practice twenty years said he thought he could do that work pretty well, but found some one who could do it better. I have been talking about this for twenty years and doing it for the good of dentistry. It is of no service to you if I alone do them, but any of you who try can do them just the same, and I don't see why you don't. A gentleman said he did not see how. I told him it would pay him to go to Cincinnati and I would spend the time with him. Large contour fillings which have taken three or four hours could be done in twenty minutes. Could we get the dentists to do these things, benefit would accrue to the profession. Any of the younger ones sitting here can learn to do these things.

Question.—Kind of gold and thickness of gold used?

Answer.—I use the No. 4 as it comes from the depots in New York and roll it to suit myself. The time the operation was performed before the association, they challenged me that I could not do it with Abbey's foil. I accepted the challenge and did that. That is the reason I made the statement broad and general. I am speaking of unannealed foil.

Doctor ——— I want to say a word with reference to the matter of time. If there is anything on earth makes me tired it is the thought that we are charging for time. Suppose a man takes a tooth out in five seconds and charges fifty cents. If they are going to have it on the time

basis it should be reversed. When you are doing work in less time than somebody else, you are saving time for the patient and are entitled to charge for it.

Doctor Siddal.—I think Doctor Junkerman's advice is good for the man who has been in practice five, ten or fifteen years; but the idea of rapid operations for recent graduates is a mistake. He wants to take all the time he needs. A great many fillings are put in too quickly and would have been better for the dentist and patient if more time had been used.

The matter of the time being charged for is a matter of the education of the patients. The dental patients have not been educated as the surgical patients have. I do not charge according to the time; I charge according to what I think it is worth. I have seen the same operation taking the same amount of time that sometimes I have charged more money for than others, because I think it worth more. I do a better job and charge more for it, but it is a matter of education. They think it is a miserable job and ought to charge about fifteen cents for it. It is not time, but it is the quality of the operation and skill of the operator.

Doctor Todd.—Dr. J. Foster Flagg was referred to in this operation. Maybe Doctor Butler remembers, at one of the American Association meetings, Dr. Foster Flagg was called upon to give a clinic, and he had boasted that he could put in a large gold contour filling in twenty minutes. They had a good many arguments.

I will say, a good many years ago, when my father was practicing dentistry, he used non-cohesive foil, before we annealed the gold; he used it under pressure and would put in those fillings very quickly and they preserved the teeth well. They were contoured.

TREATMENT OF PYORRHEA.*

BY HARRY C. KAHLO, M. D., D D. S., INDIANAPOLIS, IND.

Before entering upon a consideration of the practical treatment of pyorrhea, I desire to say something about the specialist in pyorrhea. I want to give him due credit for the success he has achieved in the combating of this disease. The profession owes him much for the work he has done and the developments he has made and given to us. Dentistry has reached a point where, if it were not for men who specialize along different lines, the general practitioner would be tremendously handicapped in his sources of knowledge. In the treatment of pyorrhea, such men as Adair, Rhein, Smith, Talbot and Younger have given us

*Read before the Indiana State Dental Society, June, 1904.

ideas which they follow in their practices, for which we are duly grateful.

That the specialist is able to accomplish more than the general practitioner in the treatment of pyorrhea is just as reasonable to suppose as that the oculist is more successful in the treatment of diseases of the eye than the general practitioner of medicine. In the first place, he makes a life-study of a single condition. Secondly, he is able to give this condition more detailed attention. Thirdly, his work has enabled him to reach a great degree of manipulative ability. And lastly, he, in many instances, inspires his patients with a greater degree of confidence and thereby is able to demand their full co-operation in the management of their cases.

His greatest sin is that he develops into a hobbyist and an extremist. As a hobbyist he exaggerates the value of certain measures and advocates certain theories, which may be his own, to the exclusion of others which are practicable. As an extremist he often exceeds the point wherein the end justifies the means. In illustration, I learn through dental journals that roots are often amputated and the portion removed is replaced by porcelain. To how extensive a degree this operation is carried on I do not know nor do I know the percentage of successes which result from it, but personally I believe I should prefer a small bridge rather than resort to such extremes and have to take a chance on the latter as the ultimate result. However, I believe in the specialist and I wish him continued success.

I also believe that the general practitioner is, or should be, able to treat pyorrhea successfully as it is commonly met with, provided he equip himself with a knowledge of the disease and follow as closely as possible the principles and practices of the specialist. The great trouble is that too many of us either lack confidence in our ability, do not feel warranted in devoting the necessary amount of time which the condition demands, or are doubtful about receiving sufficient remuneration for our services. If we shirk the work because of the time it will consume, we underrate the value of the natural teeth. If it is a matter of compensation, our patients underrate the value of the teeth. Of course there are many instances wherein the matter of compensation absolutely precludes the possibility of treatment, since pyorrhea is so frequently found in the mouths of patients of

meagre incomes and absolutely no appreciation of the worth of the teeth. But there is a field in which none of these obstacles is present and it resolves itself into our ability to obliterate the disease. It is to be assumed that every case of pyorrhea cannot be cured. Even the specialist is not always successful, but his wide experience has taught him to pretty accurately prognosticate, after a careful examination of the case before him. We all have, and will probably continue to have, failures in this class of work, just as physicians continue to have deaths in their practices, but where failures *do* occur we should be able to feel that we have done our full duty and our patients will realize that we at least have a conscientious interest in preserving their teeth.

The first point toward the treatment of a case of pyorrhea should be to instil into the mind of the patient a practical knowledge of the condition that exists, what the outcome will be if allowed to go unattended, and what the possibilities for treatment may be. It is absolutely essential that we have the full cooperation of our patients in this work, and this we cannot hope for unless they are fully impressed with the gravity of the condition. We should be very conservative in our estimates of the time required to restore the parts to health. Conscientious treatment should soon produce sufficiently reassuring results to satisfy the patient who has an interest in the outcome of his case.

Now with regard to the treatment from a practical point of view.

Whatever the theories of causation may be or how finely and scientifically they may be drawn from a pathological standpoint, we cannot lose sight of the one underlying fact that we have a localized inflammatory condition of a degenerative nature, and in order to cure it we must rely largely on local measures.

Not that I would ignore the possibilities for systemic treatment entirely, for there are cases in which an anemic condition is present or where a gouty or rheumatic diathesis exists. Such conditions should receive systemic treatment which should indirectly assist the local treatment.

Of the various methods in use for the treatment of pyorrhea I consider instrumentation the chief remedial measure.

That it is impossible to effect a cure in a case of pyorrhea so long as there exists particles of calculi or other foreign sub-

stance, I firmly believe. I further believe that it is possible to effect cures as the result of complete removal of all foreign substances by instrumentation *alone*, in some of the mildest forms, or rather the earliest stages of the disease. The instruments should be perfectly adapted to reach every point affected and the manipulation should be careful, thorough and persistent. To rely wholly on the sense of touch in the accomplishment of this end is impracticable. Here we may be greatly assisted by the use of compressed air under high pressure. The air forces the gum away very effectively and also removes the results of the hemorrhage which occurs from the use of instruments, enabling the operator to see what he is doing and what he has to do.

So far as the use of drugs is concerned I think they are quite secondary to instrumentation. While they undoubtedly are of value so far as antiseptic and stimulating properties are concerned, it is impossible to cure a case of pyorrhea by the use of drugs alone. I think many of us are inclined to place too much reliance on the curative effects of drugs and especially those of a proprietary nature.

The so-called antiseptic mouth-washes may be used in an unlimited manner without result, provided that foreign matter is present at the seat of trouble. Do not understand me to disregard the antiseptic phase of the treatment of pyorrhea, for I believe in it thoroughly as an adjuvant. But I deplore the popular idea of expecting to achieve any degree of success to result from frequently rinsing the mouth with So-and-so's mouth-wash. If an antiseptic is going to assist us at all, it can only do so by direct application to the affected part. This may be best accomplished by the assistance of compressed air.

SPLINTS.

Much may be gained in the treatment of many cases of pyorrhea by the use of some form of splint to secure immobility of the diseased teeth. Individual cases should suggest individual methods, but the general principle to be observed is that whatever the form of splint used, it should not come in contact with the seat of the disease. The use of ligatures, of any form, should not be resorted to except for temporary relief, while something of a permanent nature is being made.

DEVITALIZATION OF AFFECTED TEETH.

A great deal has been written regarding the virtues of this form of treatment in connection with pyorrhea. Many claim that it is the only correct road to success where the disease has made any advancement. I question the correctness of the theory upon which they base this form of treatment and would prefer a more conservative plan of treatment, using this as a last resort. Some men may have one hundred per cent of successes in the operation of devitalizing teeth, but I am not of that number, and I prefer not to forget the possibility of having a sore tooth the result of the devitalizing process, though I succeed in freeing it from pyorrhea.

OCCLUSION.

The matter of faulty occlusion is supposed to be a frequent cause for pyorrhea.

I do not believe that it is as common a cause as is popularly supposed, for the reason that we see all forms of malocclusion in mouths where there are absolutely no signs of pyorrhea. However, where the disease is present about teeth which in the articulation of the teeth are bearing a heavier force of mastication than their neighbors, I would grind them away to a degree which would relieve the strain and insure them rest.

PROPRIETARY REMEDIES.

There are a number of proprietary remedies now on the market for the cure of pyorrhea. Of these I have used one or two and with success. Their particular virtue lies in the method of their application, viz: on tampons of cotton applied at the point of inflammation and allowed to remain for twenty-four hours. This causes a temporary recession of the gum, and on removal of the cotton enables you to see and to remove bits of culculi which had not been discovered.

These drugs possess a stimulating action which is beneficial.

Those who are not supplied with a compressed-air apparatus will find this method of treatment very satisfactory, in fact it is the only other plan I know of which enables us to bring

within view of the deposits which lie some distance below the cervical aspect of the tooth.

MASSAGE.

The massaging of the gums is a practical aid in restoring them to a normal condition. Of course this form of treatment should not be used until after the deposits have been removed. The effects of massage are mildly stimulating and tonic.

X-RAY.

The X-Ray has been found available by one of our leading pyorrhea specialists who reports successes to result from the stimulating effects of the remedy. We would hardly be justified in buying a static machine for the treatment of pyorrhea in general practice.

PROPHYLAXIS.

A great deal could be said along general lines of prophylaxis which might rightfully come within the province of this paper, but which I will eliminate owing to the fact that in order to cover the ground with any degree of thoroughness I should prolong this paper beyond reasonable limits. Before concluding, however, I want to say something about the situation when complete restoration has been effected, at least to all intents and purposes. When this point has been reached, we have still another and an important duty to perform, namely, that of giving the patient careful and detailed instructions with regard to the care of the teeth.

We should keep in close touch with these cases for a period of several months in order that we may see that our instructions are carried out, and that there are no signs of a return of the disease.

If we have a knowledge of the pathology of pyorrhea, are conscientious, patient and persistent in our treatment, and if we possess the confidence and co-operation of our patients, I see no reason why the percentage of successes in the treatment of this disease should not be consistent with the percentage of successes in any other form of dental or oral malady.

DENTAL POVERTY.*

BY G. S. JUNKERMAN, D. D. S.

Dean of the Cincinnati College of Dental Surgery, Cincinnati, Ohio.

The statements and deductions received from this paper are not to be used as evidence of the writer's low estimation of the practice of dentistry *as it should be,* but *as it is.* We do not expect this paper to be an agreeable one. Poverty rarely, if ever, is so. Lessons may be taught from the dark, as well as the light, side of life, and the general custom in dental societies has been somewhat deviated from in this document in that it refrains from public self-aggrandizement and the portrayal of professional class distinction, thoroughly convinced that the entire profession must live as an integer, or be buried in an unrecognized mass in potter's field.

The dentist produces nothing and must therefore be classified as "genus spongia," his pabulum being the public or laity. The laity no doubt cannot understand how poverty and dentistry can be mentioned in the same train of thought, except in a retrovertise sense upon the patient who has been unfortunate enough to require and receive services from one of the exponents of the calling. By chance there may be some few dentists also who think they see an existing incongruity between the two subjects. For the existence of these conclusions in the mind of the laity, we will neither condemn *it,* or try to correct it, being satisfied that no good will accrue, until such a time when the profession awakes to a full appreciation of the fact that poverty does stalk triumphant in its ranks. To those who cannot or will not see the existing condition, it is needless to offer consolation. They are like the turtle who, rapped with a stone, protrudes his head and then withdraws it again to its shell in fancied security, although the alarm may have been the forerunner of an avalanche or mountain slide that will crush out its life.

Not all the logic of Plato could persuade us to the conclusion that justice holds sway in the dental profession of to-day. Practitioners grow gray in the service, and those accredited by general consent with being at the head of their calling are dying from year to year. What has their harvest been? Their last

*Read before the Northern Ohio Dental Society, June, 1904.

moments will be free, at least, from worry over the late decree of the Supreme Court declaring constitutional the direct inheritance tax law. Is it possible that the inventory will be taken on the other side of the great divide? If there be any reward for these shining lights it will have to be a heavenly one, as examination of their wills usually reveals a plentiful lack of stocks, bonds, cash and realty. The estate may consist of a large stock of human gratitude, but I fear this ceases to be a tangible asset after the spark of life has gone out.

In our rational and lucid intervals we are unable to comprehend how anybody can follow a calling, especially dentistry, without at least the anticipation of a commensurate reward. We may love or should at least be contented with our occupation in life, but it is only congenial and pleasant to us as the remuneration derived therefrom permits us to satisfy the tastes that a professional gentleman should possess. It has been openly asserted in dental meetings that no thought of fee should be commingled with the operation. This does not accord with my views and I will be honest enough to assert that no two thoughts can be more harmoniously blended than a beautiful operation and a beautiful fee. I love to think of them together, and the more munificent the fee appears the more beauty and inspiration I can throw into my operation.

Poverty exists in other forms besides in the estates of deceased dental lights. In their living estates we find continual manifestations of it. Good dentists are men of refined and cultivated tastes. They must have books, pictures, fine furniture and fine houses. The uncultivated laborer has no tastes or desire for such luxuries. This artistic taste and with it the desire must be co-existent with the artistic dentist. Have any of you lately purchased a Rembrandt or a Murillo? Do your incomes keep pace in a reasonable degree with your desires? There may be a few of the above-mentioned turtles who think they can answer these questions in the affirmative. Their restricted horizons, however, confined by their narrow shells, are not sufficient evidence except by way of exceptions preponderant enough to prove the rule.

Poverty exists also in the appreciation shown by the public for dental services. There are only three things in life valued above all else. *Life,* itself, first, which is allegedly in the keep-

ing of the physician; property conserved by the lawyer, and lastly the soul by the clergy. If such a condition existed that either of these three possessions would be lost coincidentally with the last tooth, there would not be enough dentists in the entire United States to supply the dental services required in the State of Ohio alone. Dental services may be of vital importance and they may have some relation to life, property and immortality, but you have not yet convinced the public of the existence of such a condition and so in their sight you are poverty stricken in public appreciation.

Another line of poverty which we have in stock is that which pertains to our methods. We concede the fact that there are a great many very poor dentists in practice, but there would be many more so declared, if they were weighed in the proper balance. The public is very indulgent even over those things which they do not appreciate; consequently many dentists pass as experts because they seem to have good general results from their operations. Patients may be vitally depleted, and have great pain inflicted that results may be attained. The successful operation and the dead patient, however, have never appealed to me as evidence of good professionalism. Much of the dread and lack of appreciation and hatred toward dentists to-day exists from the following of such methods. You are poverty stricken in this phase of dentistry unless you have a system of rapid and painless operations. Love and appreciation cannot be inspired by the protracted use or abuse of clamps, separators and rubber dam. The good dentist cannot be constituted of good results alone any more than the human body can be made of water entirely, although its chief constituent is that substance. Good results procured by speedy, painless and comfortable operations is what makes the true, scientific dentist.

Our literature is suffering from starvation. We are poor in system as portrayed by college text-books. It is almost impossible to find any two that agree on a certain method. System is the first principle of organization, and organization prohibits disintegration. Without systematized methods any professional calling sinks to one of charlatanism. If our literature does not permit us to systematize the instructions to our college recruits, how can we expect the veterans who constitute our societies to maintain their positions under rigid fire. Our literature is better

than it was some years ago, but good text-books are quite as scarce now as then.

From the above deductions, which you may mentally verify or disallow, we at least have arrived at the conclusion that dentistry is suffering from a lack of red corpuscles or an impoverished condition of the blood. This condition may be the result of a taint in the blood which prevents organization of new or healing of old tissue. The question that interests us most is, has dentistry an incurable disease? Does it occupy the strata that its constituents justify? You cannot change the spots of the leopard nor can you cut out and restore the specks in the decayed dental fruit.

One microbe can do more harm than a barrel of antiseptic can do good. I do not assert, I ask, is dentistry at its proper level? If any of you have discovered the secret of reconstruction I should like to know it. There is very little incentive for high class men to enter the profession. High requirements and long curriculums will not entice high-grade men. High colors do not deceive the judge of good textures. Men who spend so much time, money and brain force in acquiring a calling, will at least exact the promise of an opportunity for compensation sufficient to house their cultivation and refinement from public contempt. One disgrace to the profession can do more harm than a hundred of you can do good, and the standing of the profession is not what it should be to-day, being neither attractive to the good men it has or the good ones that it should have. The cause of this condition does not lie alone in one quarter, but the general impoverished condition of public appreciation, improper and incomplete operative and fee system, impoverished dental literature making a highly unattractive mass for high-minded, cultivated humanity.

The fee system, which so nearly concerns our salvation, is a subject of a very delicate nature and like all other subjects of importance, has two sides. Professional men should be men of high ideals, and it requires money to maintain these ideals. If you can fill the profession with men whose requirements are great it might seem to open the gates to the securing of high fees by the profession. On the other hand, if men enter the profession whose ideals are low, and who require little to supply their wants, the fees will be correspondingly low. No better

example of this exists than in our own country in regard to the Chinese exclusion act, which was thought of enough importance to be enacted by our national legislative bodies in order to protect the American laborer. The Chinese coolies, who can live like rats, would otherwise have driven to starvation our laboring men who are the bone and sinew of this great country. Wages have remained good and our people have been able to raise and educate their families to good citizenship and good womanhood and manhood. The other side of the question is quite as important. All classes and conditions are unexempt from the requirement of dental services and the poorer classes find themselves unable to pay fees commensurate with the services rendered. These people are quite as important to a stable government and their wants must be supplied. In law and medicine the requirements of these respective professions are supplied to the poor by salaried exponents appointed by the city and municipal governments or their agents. The doctor for the poor, and the lawyer for the undefended, are matters of daily history in all cities of our country. Is this another proof of the lack of public appreciation for dental services? I presume that this crying need does not exist in dentistry, as no doubt you are all well aware that even the poorest will find a dentist still poorer who is willing or forced to work for such a tithe as may be extracted from the purses of these indigents.

If I have stated any facts in this paper, please do not blame me for them. If my glasses are not properly focused and I do not see right, I wish that you would all help me to adjust them. If you believe with me, work with me, and then perhaps some day we will all be

Like him who climbs with sturdy stride,
Far up the mountain's troubled side;
And then turns round to look below,
At hardships past, and conquered woe:
So hearts by troubles past grow strong,
And courage take in suffered wrong,
To work, and hope, then attain that rest
In nature's home on sunlit crest.

DISCUSSION.

Dr. W. A. Price, Cleveland.—I have pleasure in discussing so valuable a paper as Doctor Junkerman gave us this morning. I would take exception to a few points in order that I may express my own views and possibly we may bring out some more of the Doctor's views. Calling your attention to what he designates as dental poverty. He says we may live and should at least be content with our occupation in life, but it is only congenial and pleasant to us as the remuneration and profit permit us to satisfy the tastes which professional gentlemen should possess. He also says poverty exists also in the appreciation shown by the public in the dental services. First putting it on a financial basis in proportion to the fee and then poverty exists in the appreciation of the profession. "There is very little incentive for high-class men to enter the profession." And then he says that not all the logic of Plato could persuade us that justice holds sway in the dental profession. "Good results secured by speedy, painless and comfortable operations is what makes the scientific dentist." Now, what is an endowed dentist? What is a successful dental practice, a successful life as a dentist? We are probably going to divide right here where we start in. If we are to agree with our esteemed essayist, that the fee and appreciation of the profession make the success, then what of the men who have made the greatest contributions to science, literature and the arts, that never got enough to pay for a week's board and never got an expression of appreciation during their life-time, and yet stand out as glorious characters? Gentlemen, we must take something else as a fundamental principle in successful life. Doctor Junkerman has said there are three things in life wanted above everything else. Life itself, which is in the keeping of the physician; property, which is conserved by the lawyer; and lastly, the soul which is referred to the clergy. Lastly, No! First, the soul. What are we here for if not the good we can do for others. If life is going to be a success in dental practice it is only going to be a success so far as it loses sight of self for others. If we are going to be altogether selfish, we are going to be miserable. Why is it that we want the approval of the people for whom we work? It is simply a question of nature. A man naturally yearns for commendation. Now, then, do we get the commendation? We all, as dentists, have a personal experience, is it varied? Indeed it is varied. It is as varied as the men who go into the profession. He struck the key-note of the whole thing when he said, "good results secured by speedy, painless and comfortable operations is what makes the scientific dentist," and he should have added the appreciated dentist. If we are not going to be poverty-stricken, we must give high value. When a man tells me that the public does not appreciate dentistry, I simply say he does not know, for the public will express appreciation. A successful operation is only ideally successful when it is perfect from the standpoint of mechanical operation and free from pain to the patient.

Now, then, regarding the fee. Is the dental profession poverty-stricken for fee? I am afraid, as a profession, it is. He very aptly states when he starts it that he does not want this paper to be used as the writer's low

esteem of dentistry as it should be, but as it is. But as he carries out the paper he does not give the remedy but simply leaves us at the close of the paper with the thought that good men will not enter the profession because there is no attraction for them. There is not a calling in the world that will give a man more pleasure in its practice, if he is full of the love of it, than the dental profession; but if he is in it for the dollars he can make out of it, he will always be poverty-stricken. The operator's heart has got to go out in sympathy in a way that it cannot do for dollars. I want to say again that there are men in this room whom I know get appreciation and expressions of appreciation both in words and fee that does repay them to their satisfaction for the operations they have performed. At the same time the great masses are not giving that expression of appreciation, but they are architects of what they are building. I think the fee we get is about what we deserve. If we are not giving a very valuable service and appreciating it highly ourselves we are not going to ask a high fee, and if we do not think it is worth a good deal, certainly we cannot expect our patients to. I do not wish to be unkind to a kind friend from another State, but I say the premises of the paper is wrong. There are four things to live for, not life, property and the salvation of the soul, but next to the salvation of the soul, the good we can do.

Doctor ————.—There are various reasons, I think why the dental profession is not so much appreciated as the ministry and the legal. It is the opinion of the people at large that the dental profession is only for making money and that they are not doing a charitable work at all. In the other two professions they must have the service anyway whether they can pay or not, so it places the dental profession upon the foundation of a money-making scheme; but I think it could be remedied to a great extent. We are told in the paper this morning that if the dental profession were appreciated as they should be, that all the dentists in the world could not do the work that is required in our own State. That simply implies that there is a large amount of dental service required that is not given. People are suffering to that extent. The legal profession renders services free where it is necessary to the poor who cannot pay for their services. They have dispensaries, etc., that render these services, but the expense must be borne by some means and consequently people are called upon to make donations so that the service can be rendered. It seems to me the same service could be offered by the dental profession to great advantage. I would suggest that the college should render these services and receive the money which is donated for the purpose, and thus give the opinion to the public that it is a charitable work. As it is now we cannot be said to be doing a charitable work, for we expect pay for all we do. I think this is a point at which we can improve; but it is not to be expected that young professions should have all the improvements that the others have.

Doctor Butler, Cleveland.—One sentence of the paper of Doctor Junkerman which interested me most, the poverty part, I cannot quite appre-

ciate, except that the need of service by the people of the State of Ohio cannot be met by all the dentists in the United States. Why is it that there are so many that are going without service? If the service rendered by those who are in practice brought that kind of confidence and faith in the value of it that it should, there would not be enough dentists in two or three States to do what is needed in Ohio. So perhaps the poverty lies with us in not being as energetic and enthusiastic in the rendering of service as we should be, and as far as the remarks made about us by those newsmongers, they will do that anyway. All we have to do is to be careful we do not talk shop too much. When we go out of our offices let us go out and talk something else and know something else, then we will become known as men of science and art without talking shop all the while. There is a great deal to be observed whether you go into a library and read books and lectures of others; a great deal to be obtained by contact with the living around you. And we should have a fund of information so we can ask intelligent questions whether we can answer them or not.

Doctor Junkerman, Cincinnati.—I want to say in closing that I thank the members of the association very kindly for the courteous response they gave the paper and the high appreciation they have shown it, and it being my first meeting, I certainly congratulate myself on the full and kind reception I have received.

OPERATION FOR DEVIATION OF THE NASAL SEPTUM, UNDER NITROUS OXIDE GAS.*

BY ROYCE D. FRY, M. D., CLEVELAND, OHIO.

The object of this operation, before the dental society, was to show the efficiency of nitrous oxide gas in minor operations of the nose, throat and ear.

The anterior and lower margin of the cartilaginous septum was deflected to the left and the body of the cartilage protruded into the right nostril, causing complete occlusion. The anterior portion of the cartilage deflected to the right, had firmly adhered to the base of the nostril, making it necessary to use the trephine. Two cuts being made, one at the base and the other immediately above, after which the adhesions were broken up, which existed between the septum and inferior turbinate of the right nostril. A crucial incision was then made through the cartilaginous septum

*Demonstrated at Northern Ohio Dental Society, June, 1904.

by means of the Asch scissors, after which, the cartilage was thoroughly broken up, being also loosened from its attachment to the superior maxillary, by the use of the flat-bladed forceps of Asch.

During each of these steps of the operation the administration of the nitrous oxide was necessarily discontinued. The patient, however, not regaining consciousness nor making any demonstration until after the completion of the operation.

On account of the complete occlusion of the right nostril, the application of a solution of adrenalin chloride could be very imperfectly applied. As a result, considerable bleeding followed the operation, making it necessary to discontinue the anesthetic before the Asch tubes were inserted. After the bleeding had somewhat subsided the nitrous oxide was again administered, and the tubes inserted. The five stages of this operation, namely: the two cuts with the trephine, the breaking up of the adhesions, the crucial incision, the fracturing of the cartilage with the flat-bladed forceps, and the insertion of the tubes, occupied not to exceed ninety seconds.

It may be of interest to your readers to know that the complications liable to occur as a result of a neglected deviation of the septum, are as follows: Inflammation of one or more of the accessory sinuses of the nose, disease of the middle ear, pharyngitis, laryngitis, and bronchitis.

PRESIDENT'S ADDRESS.*

BY W. H. FOWLER, D. D. S., PAINESVILLE, OHIO.

It will not be my purpose to make a lengthy or scientific address, even if I were able to do so. I would like to say a few words to you on the value of our conventions. To attain success and perfection in any undertaking, it is almost indispensable that there should be concentrated and united effort.

This is an age of associations, and it is this associated effort that has encouraged scientific investigation, raised the standard of morality, of education and stimulated our literature.

You will always notice that the leaders in any profession

*Presented at Northern Ohio Dental Society, June, 1904.

are leaders in associations for the advancement of their profession, let it be what it may.

That there is great good accomplished by associated work is manifest to all. How are we as members of a dental association to get the greatest amount of good from our meetings?

Our most earnest and advanced workers are in our societies and yet it is a matter of regret that at least two-thirds of the dentists of the State of Ohio are outside of our dental associations, who, if once interested, would make active and valuable members.

Let each one of us make it a personal matter to see that all such receive a cordial invitation to join us.

Especially our competitors. They won't think any less of you, but instead will feel thankful that you take an interest in them and will feel they are compeers instead of competitors to you. (I speak from experience.)

There is no reason, with the dental journals published, why every dentist should not be informed on what is going in the profession.

For our own benefit we should be identified with some society. In attending its meetings, we come in contact and become personally acquainted with some of the best men in the profession, men whom we should consider an honor to know.

Often when we become intimately acquainted with our neighboring competitors whom we had never met, and know only through hearing some of their dissatisfied patients speak ill of them, we learn they are men whole souled and glad to aid us in any way they can.

All honor to the founders of the Northwestern Ohio Dental Association. I remember with gratitude and pleasure the kind remarks and advice of some of the charter members, although I never became personally acquainted with many.

It is my experience with members of this society, that they have always been as willing to give advice and counsel as we were to receive it. I think they should know their kindness is appreciated.

In conclusion I wish to thank you for the high honor you have done me in elevating one so unworthy to the dignity and responsibility of conducting the business of the forty-fifth annual meeting of the Northern Ohio Dental Association.

I beg your charity in criticising my efforts to discharge my duties, assuring you that my errors have been the result of inexperience rather than from lack of interest in that which is to the best interest of our association.

I wish to thank the executive committee for the most excellent program they have furnished us this year, especially the pain-preventing essays; and as this is mostly a pain program from start to finish, we ought to be able to enjoy it to the finish.

Our patients will be pleased when we learn how to perform all operations upon the teeth painlessly.

REPORT ON PRESIDENT'S ADDRESS.

Your committee begs to submit the following report:

We wish to commend the address to the consideration of the members and visitors present. Especially would we call attention to the statements regarding the benefits of membership in dental associations, and urging the duty of each member to do missionary work in his own locality.

We would suggest that the word "competitor" be eliminated, since dentists who hold proper relations to the profession, are not competitors, but associates. The remainder of the paper we agree with and commend especially as coming from one who has been so long connected with this society and working for its welfare and growth.

Respectfully submitted.

J. W. McDill,
H. C. Kenyon,
W. H. Todd,
Committee.

SUGGESTIONS

A GOOD PLATE-POLISHING COMPOUND.

To put a high polish on a plate use aqua ammonia in the chalk instead of water, the result will be found satisfactory. After polishing plate, wash it in a tepid water, and dry. Then go over plate with a clean buff wheel.—*Stomatologist.*

HOW TO MAKE A CLASP THAT WILL FIT.

In making a clasp a paper pattern is first cut, and trimmed to fit tooth, then clasp cut to pattern. Very little fitting of the metal is necessary, as the paper adapts readily to the tooth and the clasp will do the same; this is the easiest and best method to make clasps, as it insures a good fit.—*Stomatologist.*

NICKEL FOR REGULATING BANDS.

Can you suggest some economical substitute for German silver to be used in bands in regulating cases?

A nickel rolled out to the proper thickness serves the purpose far better than German silver. It is better in color, and remains so; is somewhat stronger, and can be soldered with the greatest ease.—*Dental Brief.*

TO REPAIR RICHMOND CROWN PINS.

If the pins in a Richmond crown should break too closely to admit of soldering a piece on, drill out remaining piece of pin, and cutting out solder to pin hole is reached, pass new pin through hole, and if the tooth overlies the hole, as is generally

the case, bend pin at right angle, try in, and wax in position, invest and solder.—*Stomatologist.*

TO ADJUST A BROKEN PLATE.

To adjust a broken upper or lower plate take two flat pieces of modeling compound. Heat one piece and place over the cold one. Then press the teeth of plate into this and adjust the fracture. Cool the compound and pour plaster into plate. The idea of using one cold and one heated is to prevent contraction. Another method is to use a match-stick, attaching it with hard wax to the posterior teeth, then adjusting the fractured plate, waxing over the fracture and pouring impression.—*Stomatologist.*

TUBE AND SPLIT-PIN ANCHORAGE FOR CENTRALS AND LATERALS.

F. A. Peeso, Philadelphia.

When one of the centrals is missing, a tube is placed in the remaining central and the hooked spur in a good filling in the lateral, just at the basilar ridge. When a central and lateral are lost, a tube is put in the canine and the spur in a filling in the remaining central. It also forms an excellent support where the first bicuspid and lateral incisor are gone, the canine being tubed and spurs from the dummies resting in the central incisor and second bicuspid.—*Items of Interest.*

SOLDER FOR ALUMINUM.

E. Bumgardner, Lawrence, Kan.

A very good solder for aluminum and one which will not undergo rapid change in the mouth may be made as follows:

℞

Aluminum	60 parts.
Zinc	10 parts.
Phosphor-tin	30 parts.

Organic compounds all the way from vaseline to lemon juice have been recommended for use as fluxes. One of the best that

I know of and one that works very well with the solder just mentioned is stearic acid or common stearine.—*Western Dental Journal.*

PRACTICAL POINTS IN INLAY WORK.

R. B. Gentle, New York.

In making inlays of low-fusing body proceed in the following manner: Apply the dam, not for the purpose of keeping the cavity dry, but to give a clear working space, use rolled gold No. 30 unannealed for the matrix. In getting the impression use wet cotton pellets for packing instead of chamois disks, as the cotton will, when wet, remain where it is placed, thus overcoming the tendency to slip when the matrix is being burnished to the cavity edge. Remove the matrix by means of the chip blower, thereby relieving pressure brought to bear on any special point—as in case where an instrument is used. After the inlay is baked, cover the outer surface with a thick coating of paraffin, letting it run down on the gold as well. When cold peel the gold from the paraffin and inlay with the pliers, and cover the exposed surface of the inlay with hydrofluoric acid. Let stand until the acid has exhausted its strength. Hold the paraffin in cold water and chip it from the inlay, leaving it ready for inspection.—*Dental Brief.*

FORMING A MATRIX FOR COMPOUND CAVITY.

Jos. Head.

In forming a matrix on the compound distal or mesial surface of a lower molar or bicuspid, the metal is held lightly, and a large quantity of slack is swaged into the cavity until the edges become defined; then the cavity is packed with bibulous paper and the excess metal molded to the tooth in the form of a half-cap. It is most essential that the grinding surface of the tooth be well covered, as this part of the platinum forms a truss with the two sides that will prevent distortion when the matrix is being removed.

When this much has been done, the edges of the cavity can be burnished, care being taken to exclude all wrinkles, and the matrix swaged to the bottom of the cavity.

When the contour of the tooth forms an undercut that threatens to distort the mold on its removal, the cavity should be firmly packed and the platinum on the sides of the tooth slit with a knife and bent out, making removal easy.

The principal of forming the matrix to corresponding cavities in the upper teeth is the same, only with the upper teeth the operator works on the right side of the chair as usual.—*Dental Cosmos.*

PROSTHETIC HINTS.

C. W. Holbrook.

It is quite often we meet with cases of prominent gum, with short lips, and with both conditions at same time. You well know it is often a trying problem to decide how to do justice to your patients, to yourselves and make a serviceable denture, considering strength, appearance, adaptability and general usefulness as a prosthetic appliance; also considering the pocketbook restrictions of your patient. I do not hesitate to state that my experience has been broad, owing to the fact of having a laboratory for dentists for a number of years, where there came before me many cases very trying to solve. To meet the requirements on prominent gum and short lip, I often fit gold bands with sufficient strength and as little thickness as possible direct to the gum under the lip.

I take pure gold plate, about thirty-three gauge thickness, and cut in a long narrow strip, wider than the band that is to be. I then lay the strip of gold tight to the gum, forcing it in place with a piece of soft rubber, such as comes on the end of a pencil, as an eraser, and let the ends extend well up to second molar. I then take a piece of thin coin gold, about twenty-seven gauge, cut it about the width I wish the band to be, and laying that on the pure gold in place, I press it in position and unite with solder, to make sufficient strength and thickness to allow for finishing, which is done on a lathe with corundum wheel. Then it is ready for polishing. I find it is best to finish the band before vulcanizing, for the reason that there is danger of bending out of place while polishing if it is finished after. This form of making the band is simpler than swaging, is quicker and saves the trouble of making dies, and the result is a perfect fit. The ends to be

attached to the plate often afford stronger attachments to their attachments than does the swaging band. I frequently use this method in temporary plates. I formerly used rubber extensions to a point between canine and lateral teeth. The great trouble with rubber extensions was that the extensions broke easily; more than ordinary care must be taken in washing the plates, as sometimes they break.—*Items of Interest.*

DIATORIC TEETH IN BRIDGE-WORK.

R. M. Sanger, E. Orange, N. J.

In regard to diatoric teeth, let me say this concerning a method I use:

Using a bicuspid diatoric tooth for purposes of illustration, the procedure is as follows: The teeth are carefully selected to fit the case with as little grinding as possible. The form in which they are made, with a long curve on the inner surface, permits the cervico-lingual surface to fit the curve of the average ridge, with little or no grinding, but if any grinding is necessary, it should be done on the base of the tooth, rather than on the morsal surface. A piece of pure gold plate about 32 gauge is cut to a size sufficient to cover the base of the tooth and project over the sides about one-eighth of an inch. This is laid on the base of the tooth and burnished to fit as nearly as possible, the edges being turned up all around to form a cup-like shape. A metal ring, which will fit in a crown swager, is filled with hot modeling composition, and the morsal surface of the diatoric tooth is pressed into it to a sufficient depth to hold it firmly, and the whole plunged into cold water, to harden the composition. With the piece of gold in position on the imbedded tooth, they are placed in the swager and covered with corn meal or some equally yielding substance, and swaged down, until the gold cup fits the tooth accurately. Upon removal, the gold is trimmed to the desired height around the edges, always allowing it to extend well up to the little holes on the approximal sides of the tooth, and then with a ball burnisher it is burnished into the central depression in the base of the tooth. The gold will be perforated when burnishing it into this hole, but the burnishing should be continued until the metal accurately fits the margins. It is then

filled about one-third full with gold or platinum foil. The gold cup is then removed from the tooth and the balance of the hole is filled with 20k. solder, until it is flush. This gives you a gold cup and pin, which closely fit the diatoric tooth, holding it so firmly that it would almost keep its place without cementing. With the teeth in the cups, but not fastened, they are assembled on the cast and waxed to each other and to the piers, on the lingual side. The assembled piece is then carefully placed in the mouth and any error in the occlusion is corrected by allowing the patient to bite the teeth to place. The diatoric teeth are then removed from the cups, and the piers and cups are taken from the mouth in an impression of terra-plastica or some suitable investing material. This gives you the pieces invested and ready to solder at the approximal surfaces. For additional strength, a piece of gold plate is laid across the lingual aspect from pier to pier, and the whole overflowed with solder. The polishing should be done with the porcelain teeth in position to prevent possible injury to the fine edges of the gold cups, but they should not be fastened permanently in the cups until everything is completed and ready for the mouth, thus avoiding dirty joints. The teeth may be permanently fastened in the cups, with oxyphosphate of zinc, gutta-percha, or by the use of powdered sulphur, after the manner of attaching English tube teeth to gold plates. In case of the fracture of one of these dummies, the repair can be quickly and easily done in the mouth, as the diatoric teeth are readily duplicated, but the danger of fracture is very remote, as the porcelain is at no time subjected to heat, and you have the full thickness of the tooth incased in gold to withstand the force of mastication. This method gives you a maximum degree of strength, a minimum display of gold and an occlusion, which is well-nigh perfect.—*Items of Interest.*

EDITORIAL

A WORD WITH OUR READERS.

It is not necessary to praise THE DENTAL SUMMARY to our readers, for everyone knows what an abundance of good material it has presented the past year. Few dentists have any conception of the trials and tribulations of an editor, or of the great amount of time he spends in obtaining readable and instructive material for his readers. His evening lamp often burns long into the night, for copy must be ready by a certain day each month. A constant grind, but withall a pleasure and a double pleasure when he feels that his efforts are appreciated. And that THE SUMMARY has been appreciated during the year just closing is attested by the many letters of commendation received from its subscribers. These we highly prize, and at this time wish to thank our readers for them.

What is to be presented in the next volume we are going to ask you to wait and see. THE SUMMARY will be kept to the high standard attained, and no labor or pains will be spared to keep it at least one of the best. We desire to thank all contributors for the many excellent articles sent for publication, and to assure our subscribers that practical methods, hints and suggestions are always welcome. Do not wait for a personal letter of request from the editor, but send an article voluntarily. Every dentist has some pet idea or methods of practice which, if contributed for publication, would make not only interesting but profitable reading. A word to the wise, etc. Ere another issue the Holiday season will be a thing of the past, so we will now take the opportunity to wishing one and all a Merry Christmas and Happy New Year.

CORRESPONDENCE

A SUGGESTION.

Referring to Dr. E. P. Beadle's bridge attachment in the September SUMMARY, page 687, would suggest what appears to me to be an improvement in *modus operandi.* Having found it difficult and tedious to burnish the metal into the prepared tooth I conceived the idea of taking an impression with cement and soapstone. After the impression is taken, I imbed it into moldine, placing over that a ring, and into that pour Melott's metal. Removing the cement impression from the metal I have a reproduction of the prepared tooth. Over that I swage and burnish 1-1000 platinum foil, or 24k. gold, 38 gauge. I then place it upon the tooth in the mouth to burnish in any little defects I may find. For swaging I use Doctor Peck's design, a cut of which is shown in April SUMMARY, page 273.

C. B. REYNOLDS, Seattle, Wash.

SOCIETY

SOUTHEASTERN IOWA DENTAL SOCIETY.

The second annual meeting of the Southeastern Iowa Dental Society will be held in Burlington, Iowa, on January 9 and 10, 1905.

WM. M. TERRY, *Secretary.*

Washington, Ia.

SOUTHERN BRANCH NATIONAL DENTAL ASSOCIATION.

The eighth annual meeting of the Southern Branch of the National Dental Association will be held February 21-23, 1905, at Memphis, Tenn.

J. A. GORMAN, *Corresponding Secretary.*

Asheville, N. C.

SOUTHWESTERN MICHIGAN DENTAL SOCIETY.

On account of the I. D. F. meeting at St. Louis in September, the meeting of the Southwestern Michigan Dental Society stands adjourned until the spring meeting to be held at Kalamazoo, April 10 and 11, 1905.

C. W. JOHNSON, *Secretary and Treasurer.*
DR. A. L. LEGRO, *President.*
DR. J. H. PALIN, *Vice-President.*

SOUTH DAKOTA STATE BOARD OF DENTAL EXAMINERS.

The South Dakota State Board of Dental Examiners will hold its next regular session for the examination of candidates at Sioux Falls, S. D., Tuesday, December 6th, beginning at 1:30 p. m. All candidates will be required to bring operating instruments prepared to do all kinds of

clinical operative work; also a bridge of not less than four teeth, including one Richmond and one gold-shell crown invested ready to solder. All candidates must positively send their applications to G. W. Collins, Secretary, Vermillion, S. D., not later than December 2d.

ARKANSAS STATE BOARD OF DENTAL EXAMINERS.

The next meeting of the Arkansas State Board of Dental Examiners will be held December 2 and 3, 1904, in Little Rock, Ark., for the examination of all applicants. Those having applied for examination will report to the Secretary Friday morning, December 2, 1904, with rubber dam, gold, plastic filling material, and instruments, to demonstrate their skill in operative dentistry. Any one who wishes may bring his patient. So far as possible patients will be furnished. The Board reserves the right to select the cavity to be filled. The examination will cover all branches of the dental profession. No temporary certificates issued to any one. Examination fee, $5.00. For further information write the Secretary.

Dr. A. T. McMillin, *Secretary.*

AFTERMATH

PERSONAL AND MISCELLANY.

Drowned.—Dr. J. K. Floyd, prominent Albany, Ga., dentist, was drowned in Flint river while bathing.

Loss by Fire.—Dr. B. W. Jones, Troy, O., sustained a loss by fire in his office building October 25th.

Appointed on Dental Board.—Dr. F. H. Brown has been appointed a member of the New Hampshire Dental Board by the governor of that State.

Fined for Practicing without a License.—William G. Clark, Brooklyn, N. Y., was fined $50 and costs October 15th for practicing dentistry without a license.

Explosion of Vulcanizer.—A vulcanizer exploded in the office of Dr. Archie Hopper, Fairfield, Neb., doing considerable damage, but fortunately no one was injured.

Dental Dealer Dead.—W. C. Messinger, proprietor of the Hartford Dental Depot, Hartford, Conn., died suddenly of heart disease October 11th, at the age of 52 years.

Union Dental Meeting.—A joint session of the dental societies of Washington, Oregon, Idaho and British Columbia is being planned to take place next May at Portland.

Sentenced to the Pen for Stealing Dental Supplies.—Adolph Post, charged with having stolen dental goods, was October 23rd sentenced to the penitentiary by Judge Chetlain, of Chicago.

Died from Shock of Extraction.—Miss Benson, aged 24, is said to have died in a dental office at Grand Rapids, Mich., October 26th from the shock attending the extraction of twelve teeth.

Passed the Board.—Seventeen out of twenty-five applicants for license passed the Louisiana State Board October 25th. The Minnesota State Board licensed six out of the fourteen who took the examination October 20th.

Municipal Dentistry.—Russia has followed the example set by Germany in establishing municipal dentistry. The latter country last year had teeth extracted for 1,871 of the school children, while the teeth of 1,561 children were filled.

Died in Dental Chair.—Mrs. Ernest Burkholder, the wife of a Wabash farmer, died in the dental chair in a Wabash, Ind., office October 20th, under the influence of chloroform. The coroner said death was due to heart disease superinduced by the opiate.

Dentists Added to Danish Army.—Ten dentists have been added to the Danish army. They have not yet received any work, but their friends are laboring in their behalf. It is also proposed that students of dentistry in the ranks should be employed as assistant dentists.

Will Practice Orthodontia as a Specialty.—Dr. W. O. Talbot will practice orthodontia as a specialty in New Orleans; Dr. F. M. Casto, formerly of Columbus, O., will practice orthodontia as a specialty in Cleveland; and Dr. L. P. Bethel will limit his practice to orthodontia in Columbus, Ohio.

A Man of Nerve.—He hadn't any nerve, they said;
But when the dentist ran
A drill away up in his head,
His howls almost awoke the dead—
He was a nervy man.

The Sultan and His Diamond Teeth.—Newspaper reports state that the sultan of Johore has been creating a sensation in London, riding in a motor car glorified with gorgeous crests and coats of arms. He has a wonderful set of teeth—all his own—each of the front ones having a diamond set in it, encircled with gold.

Corroborative.—Dentist (who has pulled the wrong tooth)—"I see how I made the mistake. I counted the molars from the back instead of the front. You don't seem to have cut your wisdom teeth yet, young man."

Groaning Patient—"That's evident from the choice I made of a dentist!"

Commits Suicide for Love.—Dr. Friend A. Phelps, formerly a dentist in South Norwalk, shot and killed himself in a room he had hired in a Main street house. A letter found in a pocket indicated that the Doctor was despondent over a love affair and his financial condition. Doctor Phelps had been in failing health, due chiefly to nervous prostration. He was 32 years old and unmarried.

Nebraska Trying to Obtain Better Dental Legislation.—A committee of dentists representing various dental organizations over the State met in Lincoln, November 4th, and formulated a bill which will be presented to the next legislature for passage. The bill is based on the law now in force in California and one of the purposes of it is to raise the standard of the profession in the State.

Sentenced for Theft.—Recorder Goff passed severe strictures on Edward T. H. Ellis, a dentist, formerly of Rockford, Ill., who pleaded guilty to stealing gold valued at $200 from a dentist who employed him. Ellis said he was forced to steal because his wife, an invalid, and their two children were starving. That this had been disproved, however, was shown when he was sentenced to nine months in the penitentiary.

Dentist Won Suit.—Much interest centered in the trial of William Hughes against William Fitzgerald at Auburn, N. Y., recently. The plaintiff sued to recover $24.00 for dental work done for the defendant. The answer of the defendant alleged that the work was not skillfully done and was not worth anything. Several dentists were called as expert witnesses. The evidence presented returned a verdict in favor of the plaintiff.

Killed by Accident.—Dr. E. L. Hann, Denton, Tex., was found dead in his office October 12th, a gun which he had been engaged in cleaning, lying by his side and an ugly wound in his breast, caused by the gun's accidental discharge. Doctor Hann was the inventor of a number of valuable appliances for guns and had won some good records in the State and National shoots for marksmanship. He leaves a wife and two small children.

Dentist Murdered.—Dr. L. A. Gebhard, aged 20 years, a dentist of New Ulm, Minn., was found murdered in his office November 2nd, and the crime is a mysterious one, as no motive has been discovered, neither is there any indication as to who the murderer is. The young man's face was gashed in many places and a blood-stained knife and hammer were found near the body. The safe in the office was found open, but nothing in it was disturbed.

Dentist Sues Railroad.—Dr. J. M. Mason is suing the Macon Railway and Light Company for $15,000 damages. He claims that he was struck in the back with a brake handle which the motorman released while he was standing on the platform of a car, and the injury has permanently disabled him. Doctor Mason is one of the best known dentists in middle Georgia, and he has a great many friends throughout the south. He was for years a member of the firm of Holmes & Mason.

Loss by Theft.—G. H. Clay, Indianapolis, Ind., loss $65. B. S. Kinsella, Lockport, N. Y., loss $225. J. H. Floore, Shelbyville, Ky., loss $150. F. P. Quinn, Reno, Nev., loss $400. R. E. Jackson, Elyria, O., loss $60. M. B. Dennis, Pt. Huron, Mich., lass $50. Martin Bros., Muncie, Ind., lass $60. Doctors Winchester, Chadwick and Howell, Jackson, Mich., lost about $200 worth of materials. J. C. Hart, Pt. Huron, Mich., loss $85. Mary L. Warren, Hartford, Conn., loss $40. Dr. V. E. Koch, Joplin, Mo., loss $65.

Married.—Dr. O. M. Young, Marion, O., to Miss Nettie M. McCurdy. Dr. F. Doolittle, Mansfield, to Miss Bessie McIlheney, Norwalk, O. Dr. F. Hoffer, Lorain, O., to Miss Luella Hard, Preston, Minn. Dr. O. P. Muckley, Huntington, Ind., to Miss Mayme Lander. Dr. B. C. Smith, Madisonville, Tex., to Miss Ethel Campbell, of Anderson. Dr. Leon Marshall, Columbus, O., to Miss Josephine Swartz, Dr. R. I. Moore, San Francisco, Cal., to Miss Ethel Murray, of San Rafael, Cal. Dr. O. M. Flim, Marion, Ind., to Miss Emma T. Stout.

Banquet to Doctor Watling.—Half a hundred men, representing the dental profession of Michigan, gathered October 20th to do honor to Dr. John A. Watling, Ypsilanti, Mich., in celebration of the forty-eighth anniversary of his entrance upon a professional career. The evening opened with an informal reception in the parlors of the Hawkins house, after which they adjourned to the dining-room, where a banquet was served the guests, following which an attractive program of toasts was given. Dr. W. H. Dorrance, of Ann Arbor, presided as toastmaster.

Army Dentist Changes.—Dr. William H. Chambers, for some time one of the officers of the Department of the Gulf as contract dental surgeon of the army, has been ordered to the Philippines to take the place of Dr. George L. Mason, who has been holding the same position in the Department of the Philippines. Doctor Mason is now on his way home, and as soon as he arrives in San Francisco he will go to Atlanta to report for duty to the Department of the Gulf, to which he has been already assigned. Dr. F. H. Wolven, now at San Francisco, has been ordered to Fort Adams, R. I., for duty.

Dental Thief Captured.—While Dr. Van Orden, Philadelphia, Pa., was in a room at the rear of his office, Edward Bolger, it is alleged, entered the house and took instruments from a table. The dentist did not miss them until a few minutes later, when he was about to extract a tooth from the mouth of a patient. Going to the door, he looked up the street, and saw Bolger running. John Coon, the dentist's assistant, was despatched in pursuit, and, after catching the man, turned him over to a policeman. The forceps, which Bolger had thrown away before he was captured, were produced as evidence.

Traveled 6,000 Miles to Vote.—Among the voters in Philadelphia on election day was Dr. James F. Love, who had traveled between 5,000 and 6,000 miles to cast his ballot for Roosevelt and Fairbanks. Doctor Love is dentist to the khedive of Egypt, in which country he has resided for thirty years, though retaining his legal residence in the Quaker city. He is a scientist of much reputation. He is a versatile linguist, speaking eleven languages. His hobby is the collection of Egyptian curios, of which he has a most valuable collection. Because of his familiarity with foreign languages Doctor Love was pressed into service by the republican state committee of New York.

Clinical Exhibit.—The Ransom & Randolph Co., dental dealers, Toledo, Ohio, have just moved into their new building and now have one of the finest dental depots in existence. The firm has planned to keep "open house "December 12th, 13th and 14th, and all dentists will be welcomed and are urged to visit the new store on these days. To make the visit more profitable to visiting dentists, they have arranged with many prominent clinicians to give free clinics in the establishment on these three days. These clinics will comprise all the latest and best methods advanced, special attention being given to operative and prosthetic porcelain restorations. Everybody welcome! Everybody come!

Kentucky Dental Law Upheld.—In affirming judgment of the Hardin Circuit Court in a case of R. H. Wilson against the Commonwealth, the Appellate Court to-day upheld the validity of the act creating the Kentucky State Dental Association and requiring the registration of dentists operating in the State. It further held that a dentist violating the law could not be indicted for each individual whom he has treated in a specified time. Appellant Wilson was indicted on three counts by the Hardin county grand jury for practicing dentistry without having first secured a certificate under the State law. On each he was convicted and fined. He appealed to the court here for a reversal. The opinion of to-day upholds the judgment imposing the first fine, but holds that the first prosecution was a bar to the other two, and directs the court below to dismiss them. The opinion of the court here was delivered by Judge Barker.

Deaths.—Dr. J. J. Richter, Oshcosh, Wis., October 26th; cause of death, tuberculosis of the lungs; aged 29 years. Dr. M. H. Snyder, Adrian, Mich., was found dead in his office October 27th; apoplexy was supposed cause. Dr. S. W. Dickerson, Portland, Ore., died October 23rd; aged 75 years. Dr. R. F. Stringer, Rogers, Ark., died of paralysis. Dr. E. G. Nelson, Baltimore, Md., died October 18th; aged 57 years. Dr. A. H. Bolderston, aged 68, died in Baltimore October 10th. Dr. C. A. Hughes, Washington, D. C., died from typhoid fever. Dr. C. H. Mosley, New York, who is said to have invented and used one of the first nitrous-oxide apparatus, is dead at the age of 76. Dr. H. T. Towar, one of the oldest dentists of western New York, died November 9th from an attack of hiccoughs. Dr. S. M. Ulrey, Georgetown, Ohio, died November 5th. Dr. A. Reibling, New York city, aged 43 years, died from an attack of pneumonia. Dr. H. T. Towar, Lyons, N. Y., died November 8th. Dr. Wilbur Lowe, Greensboro, N. C., committed suicide by shooting himself November 9th.

New Officers.—

Northern Illinois Dental Society officers are: Dr. M. R. Hammand, of Rockford, president, and Dr. A. M. Harrison, of Chicago, secretary. Elgin was selected as the next meeting place.

Southern Illinois Dental Society elected the following officers: Dr. W. G. Carney, East St. Louis, president; Dr. E. A. Woelk, Belle-

ville, vice-president; Dr. H. K. Barrett, Upper Alton, secretary; Dr. C. E. Byington, Harrisburg, treasurer. The dentists will meet next year in Litchfield, Ill.

Southern California Dental Society elected the following officers: President, Dr. E. L. Townsend, Los Angeles; first vice-president, Dr. J. W. Neblett, Riverside; second vice-president, Dr. W. C. Smith, Pasadena; treasurer, Dr. W. H. Spinks, Los Angeles; secretary, Dr. Charles M. Benbrook, Los Angeles.

Hartford Dental Society officers are: President, Dr. G. M. Griswold; vice-president, Dr. C. E. Barrett; secretary, Dr. A. E. Cary; treasurer, Dr. E. R. Whitford; executive committee, Dr. E. H. Munger, chairman, Dr. W. S. Youngblood, Dr. A. A. Hunt; librarian and curator, Dr. Hugh Dryhurst, historian, Dr. Henry McManus.

Newly Organized Dental Societies.—

Oklahoma City Dental Society officers are: F. H. Coulter, president; J. W. Grant, vice-president; C. G. Mitchell, secretary.

The dentists of Morgan county, Ill., have formed a society which will be a branch of the state dental society. Dr. C. B. Sawyer, of Jacksonville, was elected president.

The dentists of Whiteside and Lee counties, Illinois, have organized with officers as follows: President, Dr. G. B. Dillon, of Sterling; secretary-treasurer, Dr. Z. W. Moss, of Dixon.

Central Texas Dental Society organized October 8th. The following officers were elected: Dr. Pitt S. Turner, Belton, president; Dr. Sontag, Waco, vice-president; Dr. J. M. Murphy, Temple, secretary and treasurer.

The dentists of Knox County, Ill., have organized with the following officers: President, Dr. J. D. Cabeen, Galesburg; vice-president, Dr. F. C. Lander, Galesburg; secretary, Dr. C. L. Rork, Abingdon; treasurer, Dr. D. J. Griswold, Galesburg; librarian, Dr. J. F. Flynn, Galesburg.

The dentists of La Salle, Putnam and Marshall and a part of Livingston counties, Illinois, have organized a dental society with the following officers: President, Dr. C. N. Taylor, Steator; vice-president, Dr. C. S. Morsman, Peru; secretary, Dr. L. Jordan, Ottawa; treasurer, Dr. T. H. Barrett, Ottawa.

The dentists of Mercer, Henry and Rock Island counties, Ill., have organized and elected the following officers: L. W. Skidmore, Moline, president; J. W. Gluesing, secretary. The vice-presidents are Dr. W. M. Morehead, Aledo; Dr. J. E. West, Geneseo, and Dr. C. L. Silvis, Rock Island. Dr. R. M. Peace was elected treasurer of the association, and Dr. H. G. Trent, also of Rock Island, was elected librarian of the society.

Recent Patents of Interest to Dentists.—

770162—Dental tool, Rolla M. Chase, Bethel, Vt.

770066—Dentistry, Daniel T. Hill, Syracuse, Nebr.

772104—Artificial tooth, George C. Kusel, Devon, Pa.

769631—Artificial tooth, Frank L. Priest, Dallas, Texas.

767852—Dental matrix, Zeph H. Tibbetts, Highland, Ill.

767553—Dental trough, Percy Edgelow, London, England.

767743—Dental appliance, James D. Ford, Somerset, Ohio.

769758—Dental instrument, John Mills, Brantford, Canada.

767744—Gold-leaf condenser, James D. Ford, Somerset, Ohio.

768456—Tooth-brush rack, Genevieve Howard, Franklin, Mass.

769426—Dentist's implement, Lewis H. Zeran, Rockford, Iowa.

772304—Dental articulator, Frank L. Williams, Florence, Colo.

768697—Dental appliance, Morris I. Schamberg, Philadelphia, Pa.

769667—Dental suction plate, Edgar C. Reed, Loudonville, Ohio.

770115—Dental appliance, Fletcher C. Rood, Walla Walla, Wash.

770400—Rotary tooth-brush, Homer E. Tague, Indianapolis, Ind.

37173—Designs, tooth-brush holder, Adolf Gent, Hoboken, N. J.

772324—Root-extracting forceps, Nelson D. Asdell, San Francisco, Cal.

767705—Attachment for dental engines, Isidor Lyman, Cleveland, Ohio.

770854—Combined mouth-prop and mirror, cheek distender, etc., Wm. Hare, Danville, Ill.

770853—Combined mouth-prop, tongue protector, etc., for dental use, Wm. Hare, Danville, Ill.

771961—Support for dental engines and spittoons, Wm. B. Alford and E. P. Alford, Sumter, S. C.

767469—Combined tooth-brush and dentifrice receptacle, Arthur W. Ziegler and J. W. Slater, Berlin, Wis.

770768—Device for securing bicuspids or molars in crown and bridge-work, John R. Mitchell, Perth, Canada.

Copies of above patents may be obtained for ten cents each by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.